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Quality improvement and patient safety abstracts

Improving the assessment and treatment of 'alcohol withdrawal syndrome' (AWS) in patients admitted with acute coronary syndrome (ACS) at a specialist cardiothoracic centre

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Introduction

Multiple studies show alcohol withdrawal syndrome (AWS) and delirium tremens (DT) worsens outcomes in the event that myocardial infarction (MI) occurs; rarely, it has even been a precipitant of acute coronary syndrome (ACS).[1–3] Accurate recognition of alcohol intake and standardised care of AWS can lead to reduced mortality and shorter stay in the ACS inpatient cohort.

However, early recognition and treatment becomes difficult while simultaneously prioritising rapid management of acute MI, as focus naturally turns to cardiothoracic outcomes. Our quality improvement project (QIP) addresses key challenges of the above-stated issue in a busy specialist referral centre for cardiothoracic care without any on-site access to general-medical/gastroenterology teams.

Materials and methods

A mixed methodology approach was employed. Key stakeholders' (junior doctors, physician associates, nurses and pharmacists) self-reported confidence in recognising AWS clinical features was moderately high (mean score 3.2/5 [n=12]). Confidence among prescribers initiating benzodiazepine reducing regimes was low (mean score 2.25/5 [n=4]). Alcohol intake assessment was also low priority for members involved in the clerking process (mean score 5/5 [n=4]).

A 5-month retrospective analysis of reducing regime prescriptions showed instances of prescriptions not being linked to documented AWS risk-stratification. Thus, there was an increased risk of sub-therapeutic dosing, benzodiazepine overdose or organ impairment if an incorrect benzodiazepine agent was chosen.

An assembled focus group mapped bottlenecks preventing assessment of alcohol intake and subsequent AWS risk-scoring during patient stay. Lack of standardised care protocols for AWS at the specialist centre and low confidence among ACCU staff in the use of reducing regimes was highlighted.

As a result, we aimed to (1) increase alcohol intake assessment and AWS risk-scoring for acute ACCU admissions and (2) implement AWS recognition and benzodiazepine withdrawal protocol to standardise management. QIP methodology of PDSA cycles was utilised to fulfil our aims. We planned consistent interventions targeting key stakeholders and formed a working group, following presentation at a local 'quality and safety meeting', to iteratively implement interventions.

Plan

We reviewed acute inpatients (requiring more than a 1-day stay on ACCU, who were present on the ward for >/= 5 days) at every 5-day interval from 27 May 2022 to 25 June 2022. The run chart (Fig 1) shows an uptrend in documented alcohol intakes over time (baseline 45% [n=33] to 100% [n=50]). A drop in the 6–10 June 2022 period, led to the creation of ward 'AWS champions'; compliance improved significantly thereafter.

Comparative bar graph (Fig 2) shows the number of 'high-risk AWS' patients identified and how many of them went on to have documented CIWA-Ar scores, and appropriate reducing regime prescriptions.

Hesitance in CIWA-Ar scoring and subsequent prescriptions continued until implementation of official protocol prior to the 21–25 June 2022 period. After this, there was significant increase in identification of high-risk patients and documented CIWA-Ar score/prescriptions (100% [n=2]).

Conclusion

This quality improvement project highlights many challenges to the recognition and management of AWS at a detached cardiothoracic specialist centre. Identifying and targeting key stakeholders with sustained education campaigns, utilisation of ward champions to ensure compliance and the implementation of a standardised protocol led to substantial improvements in staff confidence and knowledge. Further work is planned to optimise the education campaign with an e-learning induction module.

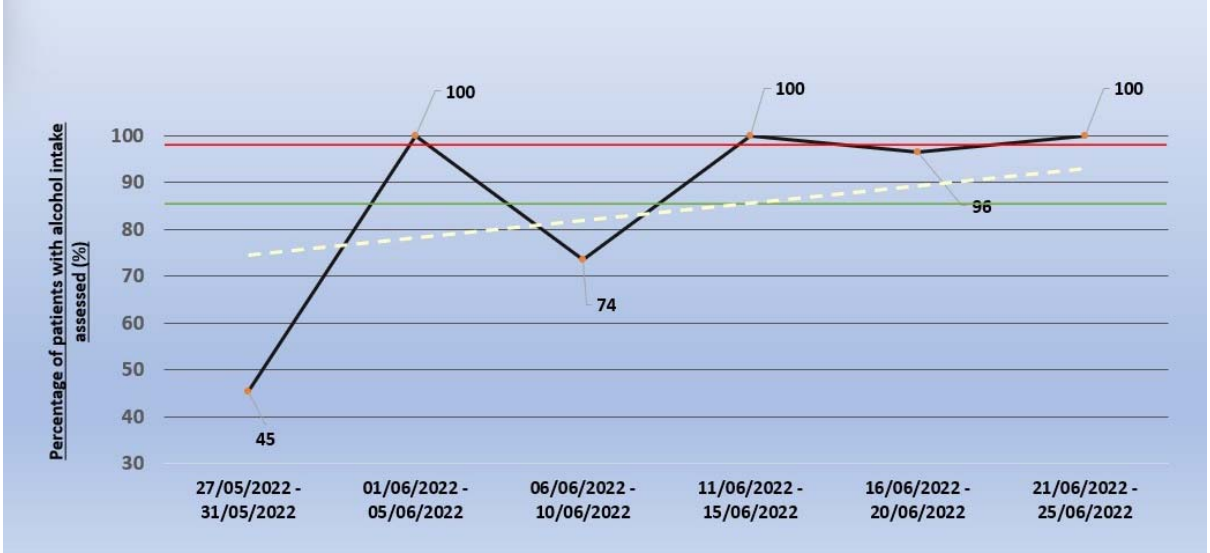

Fig 1. Run chart showing percentage of patients with alcohol intake assessed over pre-set period with mean (green line) and median (red line) of dataset.

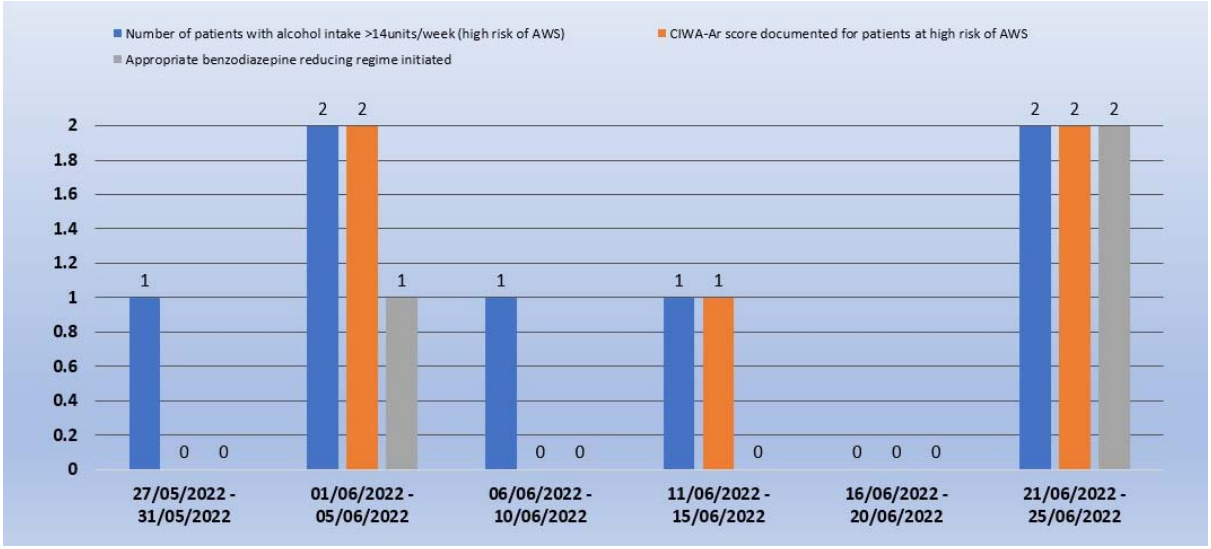

Fig 2. Comparative bar graph showing number of high-risk AWS patients with documented CIWA-Ar scores and appropriate benzodiazepine reducing regime prescriptions

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Improving oxygen prescription on the acute medical unit: a quality improvement project

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Introduction

In accordance with British Thoracic Society (BTS) guidelines,[1] the policy of the trust is that all patients should have a target oxygen saturation established and prescribed at the time of admission so that appropriate oxygen therapy can be started in the event of unexpected clinical deterioration with hypoxaemia, and also to ensure that the oximetry section of the National Early Warning Score (NEWS) can be scored appropriately. This is important as studies have shown adverse effects for patients with a COPD (chronic obstructive pulmonary disease) exacerbation who are over-oxygenated;[2] others have demonstrated serious adverse outcomes for patients presenting to the emergency department who are under-oxygenated (<88%).[3] While regular medicines are reviewed in conjunction with the London Care Record during the medical clerking process, prescription and documentation of target oxygen saturation is often overlooked. We undertook a quality improvement project with the aim of improving the percentage of patients on the acute medical unit (AMU) with target sats prescribed.

Methods

Between September and December 2022, using sequential Plan, Do, Study, Act (PDSA) cycles and improvement methodology, we audited the prescription of target oxygen saturations for all patients admitted to the 36-bed AMU at St Mary's Hospital over several 2-week periods by reviewing both drug charts and clinical notes on our electronic patient record and prescribing system (Cerner EPR). Where target oxygen saturations were prescribed, in secondary analyses we also evaluated whether the saturation target chosen was appropriate for the patient by reviewing several criteria including whether they had a COPD diagnosis, history of hypercapnic respiratory failure or raised bicarbonate on blood gas analysis. Three improvements were implemented: (1) design and display of educational posters, (2) teaching sessions for foundation doctors and (3) engagement with pharmacists and wider multidisciplinary team. Data collection periods followed each improvement introduced.

Results

PDSA 1: 23% (n=75) of patients on AMU had target saturations established / PRN oxygen prescribed. 68% (n= 51) of these patients had saturations set to 94–98% and 32% (n=24) to 88–92%. Saturation targets had been selected appropriately in 96% (n=72) of cases.

PDSA 2: The percentage of patients with target saturations prescribed increased from 23% to 37% (n=121). As before, 68% of these patients had saturations set to 94–98% (n=82) and 32% to 88–92% (n=29). Target saturations had been appropriately prescribed in 88% of cases (n=106).

PDSA 3: The percentage of patients admitted who had target saturations prescribed decreased from 37% to 25% (n=100). In total, 79% of patients had saturations set to 94–98% (n=79) and 21% to 88–92% (n=21). Target saturations had been appropriately prescribed in 96% of cases (n=96).

Discussion

Overall, only a quarter of patients on our AMU had target oxygen saturations prescribed on admission to hospital, further improvements are needed. The initial improvement to 37% was not sustained, likely because of several junior doctor changeovers and the arrival of new starters during data collection periods. Interestingly, of the improvements trialled, educational sessions made the greatest impact. Reassuringly, where target sats were prescribed, these were appropriate for the patient in over 90% of cases.

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Intravenous cyclizine: expression of concerns on the gastroenterology ward round post-Christmas and the bigger picture at a university hospital

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Introduction

Cyclizine is an anti-emetic drug commonly used post-surgically throughout the UK due to its anti-histamine (H1) and anti-cholinergic (anti-muscarinic M1) effects. There have been reports of cyclizine dependence and health seeking behaviours, particularly when taken intravenously, for its euphoric ('high') or hallucinatory effects, leading to previous concerns especially in parenteral nutrition patients[1] although there are no formal prescribing guidelines.

Materials and methods

We report the experience of patients on intravenous cyclizine on our gastroenterology ward in the post-Christmas ward rounds (28–31 December). We also report the informatics picture for the ward over a year and for the wider hospital. This audit was conducted at a university tertiary teaching hospital in South Birmingham, particularly after six of the 24 (25%) gastroenterology patients were requesting intravenous cyclizine specifically. The proportion of patients prescribed cyclizine on the gastroenterology ward over the past 12 months was compared with the proportion of patients prescribed cyclizine across the hospital in a similar period. Data was extracted from the hospital's electronic prescribing system.

Results and discussion

Of the six patients, the age ranged between 23 and 55, with 50% women; half were requiring parenteral nutrition, with length of inpatient stays varying between 1 to 10 weeks. All requested intravenous cyclizine specifically with resistance to other antiemetics and/or stopping. From 1 January to 31 December 2022, 113 patients were prescribed intravenous cyclizine regular and PRN on the gastroenterology ward over the 12-month period. In total, 4,601 patients were admitted to the gastroenterology ward over the past 12 months, meaning 2.46% of patients had intravenous cyclizine prescribed. For the same period for the whole hospital, 16,100 patients admitted were prescribed IV cyclizine regular and PRN. In total, 197,804 patients were admitted to Queen Elizabeth Hospital Birmingham over the year, meaning 8.13% of patients (with the highest proportion on day case / surgical wards) had intravenous cyclizine prescribed.

Conclusion

After the surprising number of patients requesting intravenous cyclizine as part of long stays in hospital post-Christmas, we wanted to express concerns of its use in inpatients to the wider physician community. Given its widespread use in hospitals, there may well be a wider issue that needs local/national regulatory evaluation as well as quality improvements in the pharmacy/medical prescribing we are conducting.

Reference

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Facial injury pathway proforma for referrals in the emergency department

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Introduction

St Thomas' Hospital (STH) has one of the NHS's busiest accident and emergency departments with approximately 150,000 attendances a year.[1] Facial injuries account for about 5–10% of all attendances at emergency departments (EDs) in the UK.[2] However, documentation and timely management of facial fractures can be poor.[3]

Our aim was to increase the use of the facial injury pathway (FIP) proforma in the ED for patients with a potential facial fracture. This should:

- increase clinician confidence in decision-making
- decrease length of patient stay in the ED (<4 hours)
- ensure the correct referral of patients.

Materials and methods

We collected retrospective data on patients using Symphony (patient tracking management system). Data from patients who presented to the ED at STH with facial injuries from 1 January to 26 September 2022, prior to the first intervention (n=80), were collated. We determined whether the referrals matched the injuries by using the trust's FIP proforma. Paediatric patients (under 18s; n=5), those who self-discharged (n=1), those not coded for facial injury diagnoses (n=637), or those with non-detectable injuries (n=8) were excluded.

An online survey was sent to ED clinical staff to assess awareness and utilisation of the proforma, and a knowledge quiz on referrals based on injury types.

Our interventions included the departmental Key3 presentations at multidisciplinary morning handovers, face-to-face teaching sessions with foundation year 2 doctors, video clip messages and placing physical copies of the proforma in the ED clinical areas.

A second cycle of data collection was performed from 21 November 2022 to 15 January 2023 with diagnosed facial injuries (n=13), with a follow-up online survey and second Key3 presentation.

Data were analysed using Microsoft Excel.

Results and discussion

Initial retrospective data audit and staff survey:

- Proforma was used in 5% of cases, of which 100% of cases were referred to the correct specialty and 75% were within the 4-hour stay.
- Average time spent in the department was 290 minutes.
- Proportion of correct referrals was 86.8%.
- 47.5% of staff were unaware of the proforma, and 60% unsure of how to access it.

Post-intervention data audit and survey:

- Proforma usage increased by 2.5%.
- Time spent in the department decreased by 17 minutes, to 273 minutes.
- Clinician confidence in accessing and utilising the proforma increased by 10.4%.
- Proportion of correct referrals increased from 86.8% (at baseline) to 100%.

We were limited by the coding of injury categories on Symphony, as patients who were recorded under a different registration complaint were not picked up. Older records of patients with multiple visits to the ED were not accounted for, as only the most recent episode was shown.

Conclusion

FIP proforma is a valuable tool for clinicians to identify correct referral pathways for patients. Our strategies for raising awareness among the ED staff improved both clinician confidence and referral accuracy to respective specialties. Integration of this proforma into the incoming patient management system (EPIC) would be crucial for its proforma accessibility and ensuring that patients receive the optimal treatments in a timely manner.

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Same-day MRI In TIA clinic: have dedicated MRI slots helped improve access to neuroimaging in line with NICE recommendations?

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Introduction

National Institute for Health and Care Excellence (NICE) transient ischaemic attack (TIA) guidelines (2019) advise against performing CT (unless there is suspicion of a relevant alternative diagnosis that might be diagnosed on CT). They instead recommend TIA clinic assessment to consider MRI (which should be performed on the same day as the assessment).[1] This may be challenging in some trusts due to limited access to MRI. In a university teaching hospital, dedicated MRI slots for TIA clinic use were introduced to improve access to same-day scanning. This audit aimed to assess the timing of neuroimaging in TIA clinic, before and after the introduction of the dedicated MRI slots.

Methods

We conducted a retrospective audit of patients seen in TIA clinic. Data were collected from the hospital computer system and analysed using Microsoft Excel. In September 2020 two same-day MRI slots per TIA clinic were introduced. Taking into account COVID-19 disruption, data were collected from a 3-month period prior to, and a 3-month period after, this intervention (September – November 2019 vs October – December 2020). We recorded the neuroimaging performed, the time from scan request to completion and whether the neuroimaging changed the diagnosis or management.

Results

N=354 patients were included (170 in initial period vs 184 in second period), of whom 140 had MRI. Prior to the introduction of the dedicated MRI slots, 0% of MRIs occurred on the same day, 3.4% at 1–3 days, 10.3% 4–7 days, 29.3% at 1–4 weeks, and 56.9% >4 weeks. After the intervention, 37.8% of MRI scans occurred on the same day, 13.4% at 1–3 days, 14.6% at 4–7 days, 22% at 1–4 weeks and 12.2% at >4 weeks. In total, 8.8% of patients had both CT and MRI scanning (7.6% before the intervention and 9.8% after). Across all patients, 12 MRI scans in total were diagnostic (six showed an acute DWI lesion, and six showed non-stroke diagnosis eg tumour), representing 8.6% of the total MRI scans performed.

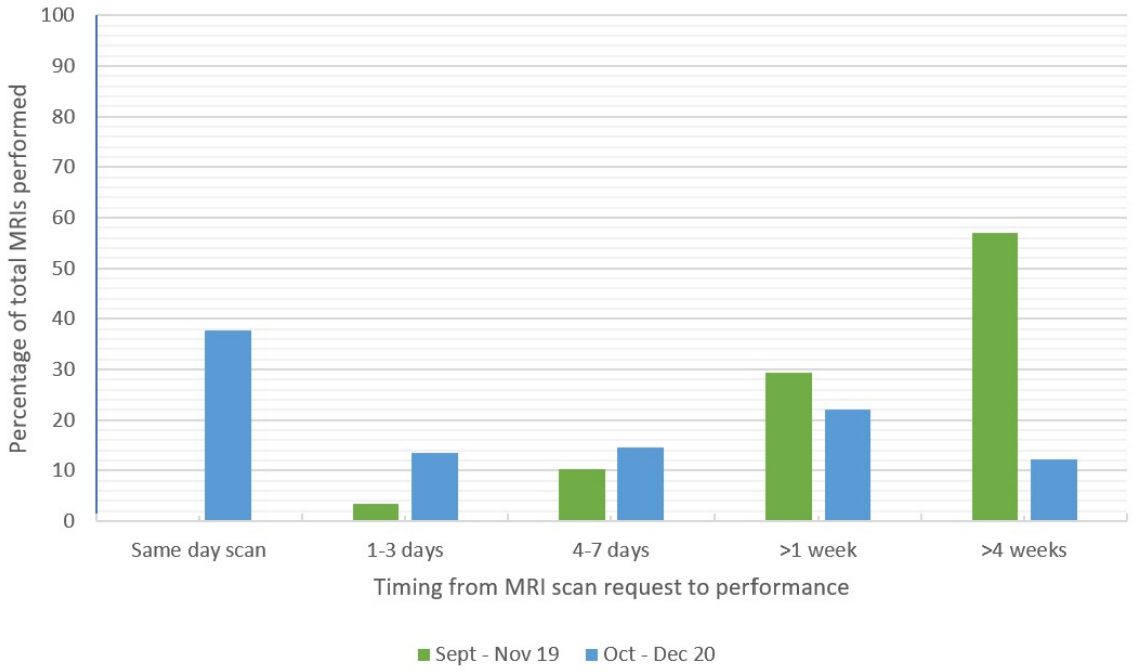

Fig 1. Timing of MRI scans requested in TIA clinic before and after introduction of protected slots.

Discussion and conclusions

The number of MRIs that changed the diagnosis was relatively low (compared with the 30% identified in the literature);[2] however, we would emphasise that negative scans can also be useful in excluding pathology. The introduction of dedicated MRI slots for TIA clinic improved access to same-day MRI, but overall access remained suboptimal. Protected slots may help improve access, but current neuroimaging is still not in keeping with NICE guidance; further research should identify reasons for delayed access to MRI to facilitate further service improvements. We identified that a small percentage of patients still get both CT and subsequent MRI imaging, representing potential wasted time and resource, and unnecessary radiation for the patient; this proportion was similar before and after the introduction of the protected MRI slots.

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Establishing an acute rheumatology liaison service in same-day emergency care

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Introduction

Delivery of acute rheumatology care is an evolving need, especially given significant waiting times for patients referred from primary care, exacerbated post-pandemic[1] with subsequent increases in numbers of patients who would otherwise require admission. Rheumatology liaison in same-day emergency care (SDEC) is an effective way to assess urgent primary care and emergency department referrals, including suspected temporal arteritis, as well as providing timely review for acutely flaring clinic patients in a dynamic and flexible manner. Expedient review of patients can consequently decrease hospital admissions. We assessed the utilisation of SDEC by rheumatology in a busy teaching hospital in central London.

Methods

We collated patients seen in SDEC over 12 months (August 2021 – August 2022); 271 patients were included in our audit. Data were analysed by demographics, referral source, presenting complaint, time to review in working days and admission avoidance.

Results

Patients were divided into two groups: 'acute' [n=129] referred by primary or emergency care requiring urgent rheumatology assessment, and 'hot clinic' [n=141] comprising pre-existing rheumatology patients needing clinical review or referrals that would usually be given an urgent new patient appointment.

Mean waiting time was 1.38 days for acute patients and 4.06 days for hot clinic patients.

Of the acute group, 95 (74%) were seen within 24 hours and 113 (87.6%) within 72 hours. Within suspected temporal arteritis referrals in this category [n=64], 57 (89%) were seen within 24 hours and 61 (96.8%) were seen within 72 hours as per British Society for Rheumatology guidance.[2]

In the 'hot clinic' group, 43 (30.5%) were seen within 24 hours, 76 (53.9%) within 72 hours and 119 (84%) within 7 days. In total, 138 (97.8%) were seen within 2 weeks of referral. This compares favourably to new clinic appointments (urgent 3–8 weeks, routine 46 weeks) and follow-up (minimum 6–8 weeks).

All patients seen in SDEC had investigations initiated on the same day as review, with suspected temporal arteritis receiving a diagnostic ultrasound within 24 hours in >90% of cases.

We analysed patients likely to require hospital admission without urgent rheumatology review within 48 hours, including severe flare of connective tissue disease / lupus, acute infection, significant presentation or flare of inflammatory arthritis causing severe disruption to mobility or precipitating frailty crisis. In total, 16 patients (12.4%) met these criteria in the acute group, and 23 (16.3%) in the hot clinic group; 39 admissions were avoided in this period. Given an average length of stay of 4.6 days for acute admissions, a potential 160 bed days were saved.

Conclusion

We have demonstrated how the utilisation of same-day emergency care to facilitate rapid access to acute rheumatology can be highly effective for timely review of patients and treatment initiation, as well as admission avoidance. It is a flexible service that provides access to rapid investigation and multi-specialty input. Patient waiting times were much improved when compared with standard appointments, with excellent feedback on timeliness and quality of the service. This is an effective method of acute rheumatology liaison at the front door, which is a model of care we believe holds promise for the future.

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Audit of readmissions in patients with learning disabilities

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Background

Individuals with learning disability (LD) represent a widely heterogeneous group of people and can be associated with broad range of primary diagnoses and multiple health conditions.[1]

The life expectancy of people with learning disability is reduced compared with the general population.[1]

The learning disabilities task group highlighted that people with learning disability had a shorter length of stay compared with the general population at our trust. This prompted an audit into the readmission rates for patients with learning disabilities.

Aims and objectives

To review readmissions of LD patients within the medical division from April 2021 to March 2022, to look out for common themes accounting for the disparity in length of stay.

Methodology

All patients with learning disability admitted to hospital within the study period (aged 16 and above into an adult medical bed) qualified for the study cohort. Readmission was defined as admission into the hospital within 28 days from the date of discharge. A list of patients who fit the inclusion criteria was pulled from EPR. Demographic details including age, sex, number of readmissions within 4 weeks, readmission with the same or different clinical condition, details of readmission including floor and clinical indication, various factors like residential status (care home etc), hospital passport, floor of admission, involvement of LD matron and appropriate management of clinical condition as per trust guidelines etc were entered into a pre-designed Excel sheet.

Results

There were 63 admissions in the study period. Fifty-nine [93.6%] admissions were within 4 weeks of discharge – our study cohort. The majority of the readmissions were on the acute floor (33/59). More than half (33/59) of the readmissions were related to respiratory (aspiration pneumonia >COVID >CAP) and neurology specialties (seizures/headache/collapse). Other causes were pain in the abdomen, GI bleeding, UTI, leg swelling, chest pain and anemia. There were no significant differences in the etiology between the group who were admitted with the same clinical condition) (27/59) (same to index admission) versus the group with a different clinical condition (32/59). The admitting floor team acknowledged LD in 89.9% of admissions (53/59). The hospital passport was in place for 16.9 % (13/59). The LD matron was aware of admission and discharge in 50.8% of admissions. The majority of discharges were done on weekdays as compared to weekends [48 vs 11]. The majority of patients were care home residents. No deficiencies were found in the clinical management of patients who had multiple readmissions.

Conclusion

Pneumonia was the commonest reason for readmission and this is in line with results from studies.[2–5] Ensuring vaccination of LD patients with COVID and flu jabs can help in reducing the number of readmissions. Acknowledgment of LD by the admitting floor team remains a challenge and needs more

education. A hospital passport should be provided to all LD patients. Trust-wide teams and pathways for eating and drinking should be established, and training of care home staff and nurses can avoid episodes of aspiration.

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Optimising admission to scope time for acute GI bleeding (UGIB): retrospective comparative analysis of the timing of endoscopy for UGIB in a Queensland quaternary centre following international recommendations for best practice

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Background and aim

An acute upper gastrointestinal bleeding (UGIB) refers to GI blood loss occurring proximal to the ligament of Treitz. UGIB is a common gastroenterological emergency, estimated to occur in around 80 to 150 per 100,000 people per year and is associated with high mortality and morbidity. Lau *et al* found that urgent endoscopy performed within less than 6 hours has not been shown to reduce mortality when compared to endoscopy performed between 6 and 24 hours.[1] Best practice suggests that endoscopy now be performed within 24 hours.[2] We aimed to undertake a retrospective comparative analysis of timing of endoscopy provided for UGIB at a metropolitan teaching hospital in Queensland prior to and following April 2020.

Method

Data from patients admitted with UGIB from April 2018 to March 2019 (cohort 1) were analysed and compared with data from April 2021 to March 2022 (cohort 2). Endoscopic, administrative, biochemical and radiological data were collected from Provation® MD and other clinical medical databases. Patients admitted from the emergency department with melaena, haematemesis, coffee-ground emesis or suspected UGIB were included. Patients who had been in hospital for greater than 48 hours, outpatients and an endoscopy indication other than bleeding were excluded. For each patient, the age, Glasgow-Blatchford score (GBS), haemoglobin (on admission), endoscopy indication, endoscopic findings, treatment, timing of endoscopy, (all-cause) 30-day mortality and 30-day repeat procedure were noted.

Results

Cohort 1: 84 patients met the inclusion criteria; mean (±SD) age was 65±18 with mean GBS of 10±3.8. Mean timing to endoscopy was 13.9±12.8 hours; 70 (83%) performed within 24 hours of admission. Thirty (36%) performed within 6 hours, eight (10%) at 6–12 hours, 32 (38%) at 12–24 hours, and 14 (17%) after 24 hours. Pathology was detected in 76 (90%) endoscopies; 42 (50%) patients requiring haemostatic treatment. Thirty-day all-cause mortality was five (6%) and six (7%) patients requiring further endoscopic intervention within 30 days. Cohort 2: 128 patients met the inclusion criteria; mean age was 68±16 with mean GBS of 9.5±4.3. Mean timing to endoscopy was 17.8±12.2 hours; 101 (79%) were performed within 24 hours of admission time. Twenty-six (20%) were performed within 6 hours, 15 (12%) between 6–12 hours, 60 (47%) between 12–24 hours, and 27 (21%) after 24 hours. Pathology was detected in 105 (82%) endoscopies; 38 (30%) patients requiring haemostatic treatment. Thirty-day all-cause mortality was eight (6%) with 16 (12%) patients requiring further endoscopic intervention within 30 days.

Conclusion

The timing of endoscopies for UGIB has been noted to have changed, possibly a consequence of international consensus. Longer periods of acid suppression prior to endoscopy have been noted and this has led to a reduction in the need for haemostatic intervention during endoscopy. There has been a

reduction in the proportion of endoscopies performed within 6 hours for acute UGIB, and an increase in those within 6 to 24 hours with no change in 30 day-mortality.

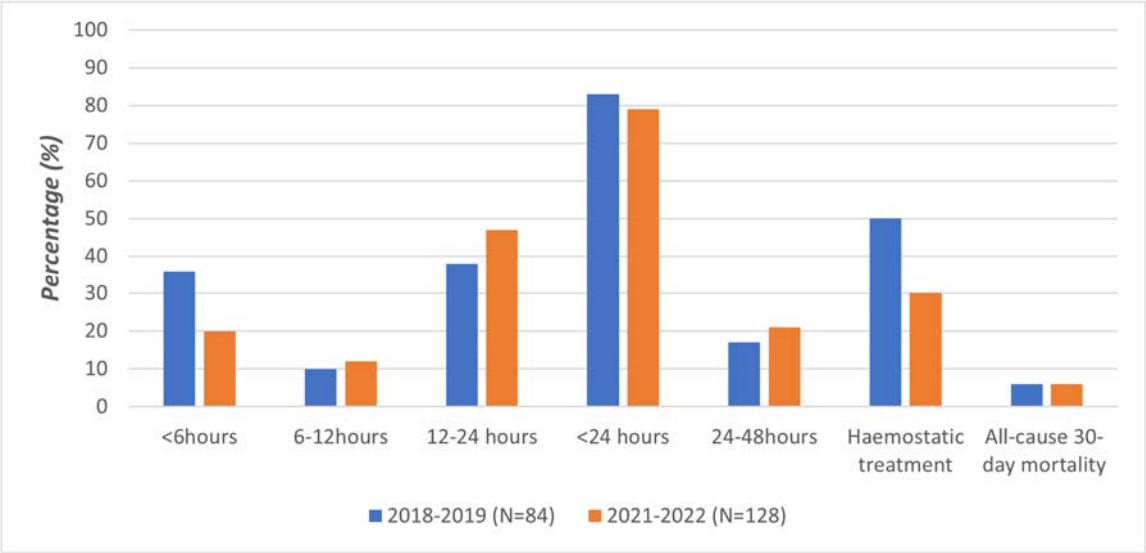

Fig 1. Timing proportions of endoscopy for UGIB.

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To increase diagnostic yield of computed tomography pulmonary angiography (CTPA) for suspected pulmonary embolism at Colchester General Hospital: are we following the NICE guidelines?

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Background

Our quality improvement project looks at whether we are compliant with National Institute for Health and Care Excellence (NICE) guidelines and appropriately utilising our radiological resources. When a pulmonary embolism (PE) is clinically suspected, clinical judgement and pre-test clinical probability scoring, such as the two-level Wells score, should be used to avoid unnecessary imaging.[1] Regular calculation of two-level PE Wells scores reduces clinically inappropriate computed tomography pulmonary angiographies (CTPAs) for suspected PE and improves the CTPA diagnostic yield. Clinically unwarranted CTPA scans over burden an already stretched imaging service and potentially delay more appropriate scans. The Royal College of Radiologists (RCR) suggests that positivity rates for PE in CTPAs should be between 15.4% and 37.4%.[2]

Aims

To increase diagnostic yield of CTPA for suspected PE in accordance with the RCR recommended range of 15.4%–37.4%. To increase two-level PE Wells score calculation to 60%. To increase appropriate quantitative D-dimer testing when Well score is ≤4.

Methods

We adopted the model for improvement approach for our project.

Baseline audit

A retrospective baseline audit of 404 adult patients who underwent CTPA for suspected PE at Colchester Hospital during a 4-month period in 2020. D-dimer result, two-level PE Wells score and CTPA reports were collected from ICE path, PACS and patient records. The diagnostic yield of CTPA was 18.56% (75 PE in 404 CTPA scans). In total, 143 out of 404 patients (35.40%) did not have two-level PE Wells score.

Our interventions

A new PE pathway was introduced trust wide in April 2021. We raised awareness among doctors during handover meetings. We presented in grand rounds and circulated a message in the junior doctors' group.

Post-intervention audit and result

We performed a second audit of adult patients undergoing CTPA for suspected PE at Colchester Hospital between April and September 2021. Data from 1,099 adult patients were collected retrospectively. Following our interventions, the diagnostic yield of CTPA for PE increased from 18.56% to 20.29%. The two-level PE Wells score calculation increased from 34% to 42%. D-dimer was tested in 364/404 (90%) patients in 2020 and 934/1099 (85%) in 2021.

Conclusion

The improvement in CTPA diagnostic yield from 18.56% to 20.29% post-intervention was significant and is within the RCR UK recommended range. While the calculation of two-level PE Wells scores improved from 33.4% to 41.2% following our interventions, we fell short of obtaining the 60% target. It was difficult to

make sense out of D-dimer testing data. D-dimer should be done only if the two-level PE Wells score is 4 points or less, rather than for all patients blindly. Hence, the main emphasis should be following NICE guidelines, calculating the two-level PE Wells score and appropriate D-dimer testing. These measures would avoid inappropriate CTPAs being requested.

Recommendations

Our most important recommendation is making the two-level PE Wells score field mandatory while requesting CTPA scans for a suspected PE. This would require certain software interface changes. We presented these findings at a governance meeting. We need to increase the two-level PE Wells score calculation in the future. We plan to carry out regular quality control audits every year to maintain optimal standards of care. We recommended following the new trust PE pathway, which is in accordance with NICE guidelines.[3]

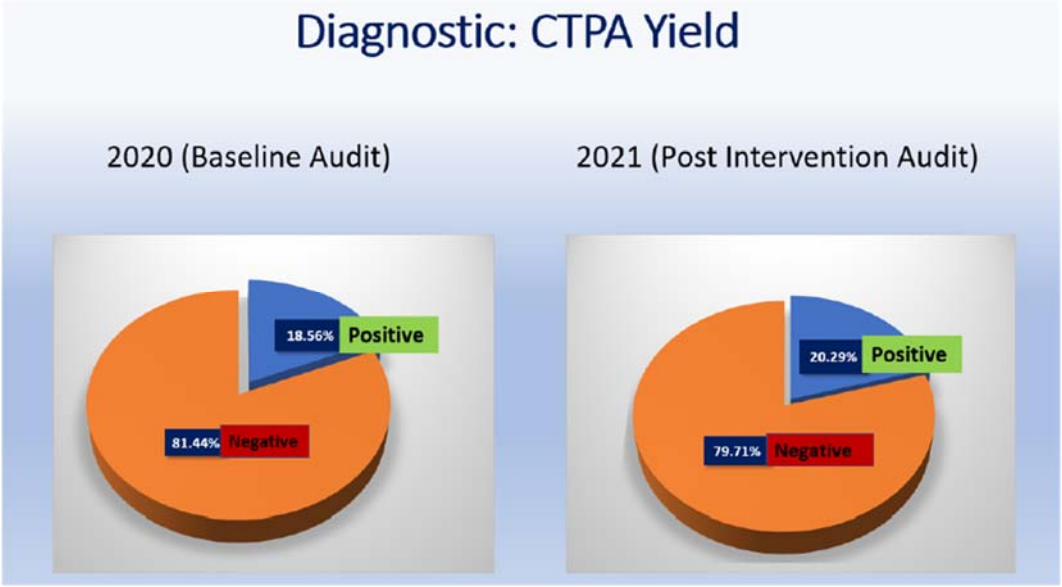

Fig 1. Diagnostic: CTPA yield.

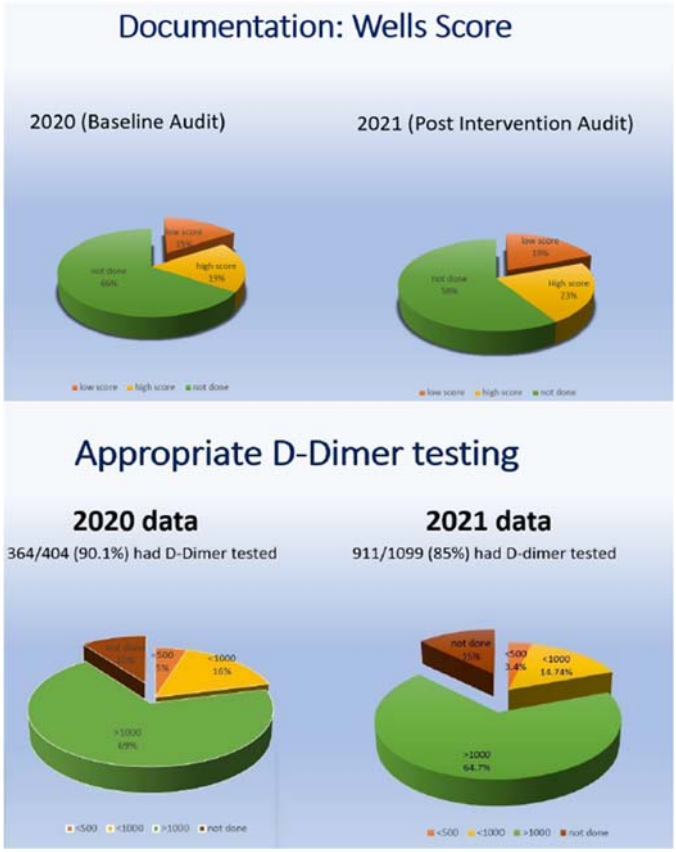

Fig 2. Documentation: Wells score and appropriate D-Dimer testing.

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New onset atrial fibrillation – optimising electrocardiographic diagnostic accuracy and appropriate anticoagulation: a district general hospital experience

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[A]Medway NHS Foundation Trust

Introduction

New-onset atrial fibrillation (NOAF) is one of the commonest cardiac arrhythmias encountered in hospitalised patients and is associated with significant morbidity and mortality.[1,2] Although uncertain, the incidence of NOAF in acutely hospitalised patients ranges from 1–44%.[3] The appropriate use and safe dosage of anticoagulation reduce the risk of all-cause mortality by around one-quarter and the risk of ischaemic stroke by two-thirds.[4] Research has shown that the rate of overdiagnosis of atrial fibrillation is relatively high, with subsequent inappropriate anticoagulation proving to be detrimental to patient safety.[5]

Materials and methods

We conducted a closed-loop audit cycle to assess the incidence of NOAF overdiagnosis based on a 12-lead electrocardiogram (ECG). In the first cycle, electronic hospital records were screened retrospectively for a diagnosis of atrial fibrillation between December 2020 and December 2021. Discharge summaries were reviewed to select patients meeting the inclusion criteria, which involved patients with NOAF diagnosed during hospital admission and newly started on anticoagulation. ECGs were evaluated in accordance with European Society of Cardiology criteria and two independent clinicians' consensus. Similar methods were applied for the second cycle conducted for data collected between October and November 2022, with a prospective approach being used. The parameters used in the audit included whether the diagnosis of NOAF was correct, whether patients were inappropriately anticoagulated, and whether the dose of anticoagulation commenced was correct. Recommendations made after the first cycle were actioned before re-auditing.

Results and discussion

In the first cycle, 32 patients were included in the data analysis. Seven patients (21%) were incorrectly diagnosed with NOAF and four (12.5%) were unnecessarily anticoagulated with an ensuing development of adverse events in one of the patients. Two patients (6%) were prescribed the wrong dose for anticoagulation. An awareness-raising campaign was conducted in the hospital. This included multiple teaching sessions in departmental meetings, circulation of posters around the hospital, and liaising with the pharmacy department to validate the prescribed dose of anticoagulation. A recommendation was made for the need for the involvement of two independent clinicians in the decision-making for the accurate diagnosis of atrial fibrillation or specialist involvement, if uncertain. In the second cycle, we included the same number of patients and used similar comparative parameters. Only four patients (8%) were misdiagnosed with atrial fibrillation and none of them (0%) were inappropriately anticoagulated or prescribed the wrong dose of anticoagulation. This reduction in misdiagnosis and inappropriate or incorrectly dosed anticoagulation was related to the use of a more cautious approach by clinicians when confirming the diagnosis of NOAF and deciding to commence anticoagulation.

Conclusion

Increased awareness among physicians of the need for diagnostic accuracy of NOAF and appropriate anticoagulation has resulted in significant improvements that have led to the minimisation of potential harm to patients and improved safety standards. We aim to use these data to help develop a cardiac

arrhythmia service at our hospital, which will further improve the diagnosis and management of NOAF and other arrhythmias.

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Assessing variation in complications and outcomes of diabetic ketoacidosis management in the United Kingdom: a multicentre quality improvement initiative

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Introduction

Differences in the management of diabetic ketoacidosis (DKA), despite established national guidance, contribute to varied patient outcomes.[1] Although single centre audits looking at DKA management exist, it is not currently well recognised if there are measurable differences in outcomes across multiple centres. The aim of this study was to assess differences in the rates of complications and outcomes of people admitted with DKA across UK hospitals.

Materials and methods

DKA admissions across six hospitals in the UK between October 2021 and September 2022 were included. DKA was defined as glucose >11 mmol/L or known diabetes, serum ketones >3 mmol/L or urinary ketones ++ or more and serum pH<7.3 or bicarbonate <15 mmol/L. People <16 years of age or who self-discharged before treatment were excluded. Pseudonymised data on complications that comprised hypoglycaemia, hypokalaemia and hyperkalaemia, and outcomes that comprised DKA duration and length of stay were collected. Complications were expressed in median number of episodes, DKA duration in hours, and length of stay in days. The 5th to 95th percentile ranges of collected data were included for all parameters. The Independent-Samples Kruskal-Wallis test was used to compare outcomes across hospitals. Significance was accepted at $p<0.05$.

Results and discussion

Since the intention was not to compare but to identify best practices, hospitals were anonymised and coded as A–F. In total, 443 DKA episodes were identified. Between the six hospitals, there were statistically significant differences in the patient length of stay (median in days (5th–95th percentiles), A – 3.6 (1.3–18.5), B – 2.1 (1.0–31.1), C – 2.5 (0.8–29.3), D – 3.5 (1.2–20.8), E – 2.5 (0.7–14.6), F – 3.0 (1.0–13.9); $p<0.001$), duration of DKA (median in hours (5th–95th percentiles), A – 15.1 (5.8–41.7), B – 13.3 (5.9–49.3), C – 13.4 (4.1–21.2), D –18.5 (4.7–69.0), E –17.1 (7.3–47.9), F –16.3 (4.7–39.4); $p=0.003$) and incidence of episodes of hypokalaemia (median (5th–95th percentiles), A – 0 (0–3), B – 0 (0–3), C – 0 (0–1), D – 0 (0–4), E – 0 (0–5), F –0 (0–5); $p=0.003$). No statistically significant differences were found in episodes of hyperkalaemia (median (5th–95th percentiles), A – 0 (0–2), B – 0 (0–2), C – 0 (0–3), D – 0 (0–3), E – 0 (0–1), F – 0 (0–2); $p=0.536$) and episodes of hypoglycaemia (median (5th–95th percentiles) A – 0 (0–1), B – 0 (0–4), C – 0 (0–1), D – 0 (0–3), E – 0 (0–3), F –0 (0–2); $p=0.198$).

Conclusion

With exceptions of hypoglycaemia and hyperkalaemia, significant interhospital variation in the rates of hypokalaemia, DKA duration and length of stay were observed despite similar guidelines. A centralised DKA

database system can aid in identification of best practices and sharing of knowledge with the intention of improving patient outcomes.

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Being a 'Teams' player: a quality improvement project expanding the role of Microsoft Teams to improve communication and efficiency of junior doctors in a ward-based hospital setting

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Introduction

Since 2020, Microsoft Teams has been established as a reliable tool for delivering video call-based meetings and teaching sessions within the NHS.[1] However, its capabilities extend much further, allowing clinicians to share encrypted messages within designated 'Teams', undertake telephone calls and simultaneously edit live documents. Historically, ward-based junior doctors have used individual paper job lists despite the associated risks of task duplication and patient data breaches if lost. Furthermore, multiple messaging modalities are currently used for work-based communication, including pagers, texts and Whatsapp.[2–4] This can result in failed communication attempts that hinder task allocation and performance, reducing junior doctor efficiency and ultimately delaying patient care. We strived to see whether adopting Microsoft Teams as a sole communication tool would improve junior doctor communication, teamwork and productivity.

Methods

A 'Team' was created on Microsoft Teams for a tertiary centre oncology department, with individual channels created for specific wards. Having confirmed data protection with the trust privacy officer, we generated a Microsoft Excel-based job list and Microsoft Word-based patient list that could be co-edited by any authorised users. The system was trialled from November 2022 to January 2023. During this time team members were encouraged to communicate via the encrypted messaging and manage workload via the shared electronic job list on Microsoft Teams. The impact on communication and work efficiency was assessed using questionnaires completed by senior house officers (SHOs). Uptake and use of Microsoft Teams-based messaging was compared with departmental Whatsapp groups by counting the number of clinical versus non-clinical message threads / discussions posted over time.

Results and discussion

Following the implementation of Microsoft Teams, SHOs reported an improvement in departmental communication and teamwork. The electronic job list was unanimously cited as a feature that expedited high priority task identification and facilitated easier handover of unwell patients / outstanding jobs to on-call teams (Fig 1). Eighty-six per cent of respondents felt that the system helped them to leave work on time. Our instant messaging audit found that 75% of threads on Microsoft Teams pertained to patient-related clinical matters versus only 40% on departmental Whatsapp groups (Fig 2). Nevertheless, during the assessment period, 67% of all clinical discussions took place on Whatsapp, suggesting that this remains the preferred communication platform (Fig 2). The positive data from this project have encouraged the oncology department to consider expanding the 'Team' to include consultant and specialist sub-team channels, including the metastatic spinal cord compression pathway. Similarly, other departments within the trust plan to trial the use of their own 'Team'. If well received, this offers scope for scalability, not only within individual trusts but across the NHS.

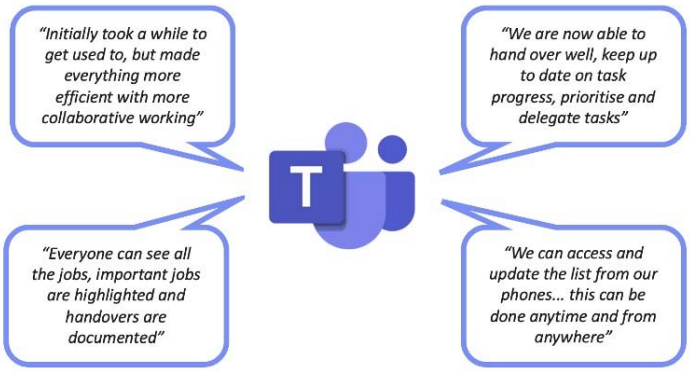
"Initially took a while to get used to, but made everything more efficient with more collaborative working"
"We are now able to hand over well, keep up to date on task progress, prioritise and delegate tasks"
"Everyone can see all the jobs, important jobs are highlighted and handovers are documented"
"We can access and update the list from our phones... this can be done anytime and from anywhere"

Fig 1. Questionnaire feedback on expanding the use of Microsoft Teams.

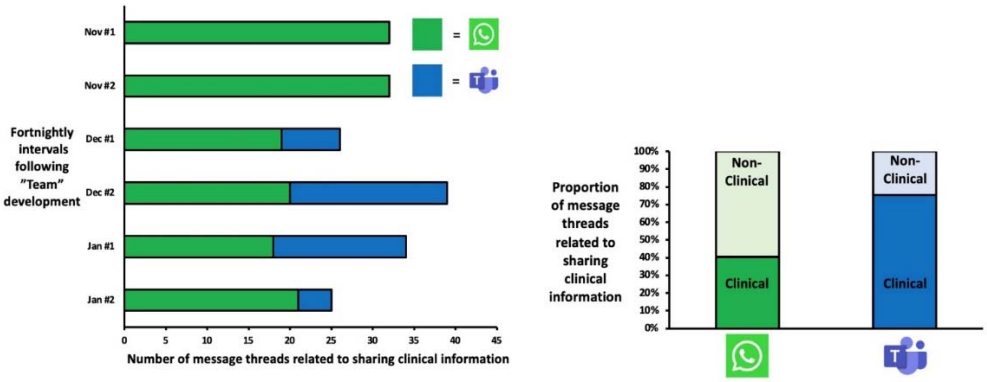
Nov #1
Nov #2
Dec #1
Dec #2
Jan #1
Jan #2
Fortnightly intervals following "Team" development
0 5 10 15 20 25 30 35 40 45
Number of message threads related to sharing clinical information
Proportion of message threads related to sharing clinical information
100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%
Non-Clinical
Clinical
Non-Clinical
Clinical

Fig 2. Microsoft Teams versus Whatsapp use for sharing clinical information.

Conclusion

This project showed that departmental adoption of Microsoft Teams and its file-sharing capacity improved junior doctor job prioritisation and task completion efficiency, with suspected faster delivery of patient care and reduced late finishing times. While clinical communication had not fully transitioned to Microsoft Teams, this is achievable with department-based education, repeated use and regular review.

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Iron deficiency in heart failure with reduced ejection fraction: improving treatment on the cardiology ward

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Introduction

Iron deficiency is common in patients with heart failure (HF) and can be present independently of anaemia. Most HF patients have functional iron deficiency rather than absolute iron deficiency. However, both are associated with reduced functional capacity as well as increased mortality.[1]

The European Society of Cardiology guidelines recommend considering intravenous (IV) iron infusion in patients with HF with reduced ejection fraction (HFrEF).[2] Studies have shown that IV iron supplementation improves symptoms and outcomes in patients with HFrEF[3], while oral iron therapy is not effective.[4]

The aim of this quality improvement project was to evaluate if patients with HFrEF identified as iron deficient were considered/offered IV iron supplementation. Educational interventions were introduced after each cycle to improve clinical practice (standards target 100%).

Materials and methods

All inpatients on the cardiology ward at our institution were studied over a period of 2–3 weeks across 2 Plan-Do-Study-Act (PDSA) cycles (between August 2022 and January 2023). All patients with a diagnosis of HFrEF and recent blood tests demonstrating iron deficiency were included in this study. Data were collected on iron levels and if IV supplementation was considered/offered. Patients on end-of-life care were excluded.

Interventions following each cycle included poster summaries of guidelines, presentation of findings to the cardiology team and WhatsApp group reminders.

Results and discussion

The first cycle had 13 HFrEF patients tested for iron levels, of which seven were iron deficient; of those, four (57%) were treated with IV iron. Following educational interventions, the second cycle included 11 HFrEF patients tested for iron deficiency of which four were iron deficient; all patients with iron deficiency were supplemented with IV iron.

Table 1. HFrEF patients on the cardiology ward analysed according to iron levels and if they were considered/offered IV supplementation

	Cycle 1	Cycle 2
HFrEF patients tested for iron deficiency	13	11
HFrEF patients without iron deficiency	6	7
HFrEF patients with iron deficiency	7	4
HFrEF patients treated for iron deficiency (% of those with iron deficiency)	4 (57%)	4 (100%)

Conclusions

Our practice in HFrEF inpatients and their treatment of iron deficiency did not follow guidelines initially but showed improvement, such that the standards target was reached, following educational interventions. Future studies will aim to investigate the long-term effects of our interventions on a larger sample size.

References

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Development of an ambulatory assessment unit – acute oncology service MDT to provide safe follow up of new oncology patients presenting to an SDEC unit

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Introduction

Building on previous work done at our same day emergency care (SDEC) unit, called ambulatory assessment unit (AAU), our project aimed to streamline the care of patients with new oncology diagnoses who present to the unit.

Our previous data suggest that between April 2018 and July 2020, 199 new malignancies were diagnosed, representing just over 1% of patients seen in that period.[1] Seventy per cent of those new malignancies were not already under investigation[1] and therefore our SDEC unit was crucial in arranging adequate follow up and investigations.

Patients often present non-specifically, and concerns of potential malignancy arise from imaging scans performed for other indications. They have multiple attendances and see differing clinicians while having further investigations, affecting patient experience. Ownership is a major problem identified in dealing with this group of patients in SDEC. We thus identified the need for a central follow-up system.

We offer a pathway to ensure safe follow up and timely actioning of results in the form of a weekly AAU-acute oncology service multi-disciplinary team (AAU-AOS MDT) meeting.

The AAU-AOS MDT took on the following responsibilities to tackle problems previously identified:

- ownership and follow up of 2-week wait investigations
- arranging staging imaging and biopsies
- onwards referral
- communication with patients, relatives and GPs.

Materials and methods

Using electronic patient records, we collected the following data over a 12-week period:

- MDT members present
- number of patients discussed
- outcome of patients discharged
- if referral to specialist input was done prior to MDT or by the MDT (in which case the MDT serves as a safety net)
- type of cancers diagnosed
- various pathways that the patients took once they were referred to the MDT.

Results and discussion

Meetings are well attended with at least one AAU consultant, one acute oncologist (consultant or registrar) and one AOS nurse at each meeting.

Fig 1 shows the number of cases discussed per meeting, with subdivision into how many were discharged or remained on the review list:

- number of cases discussed per meeting ranged from 6–20
- average number of cases discussed: 13
- average discharge rate: 5.7 cases/meeting.

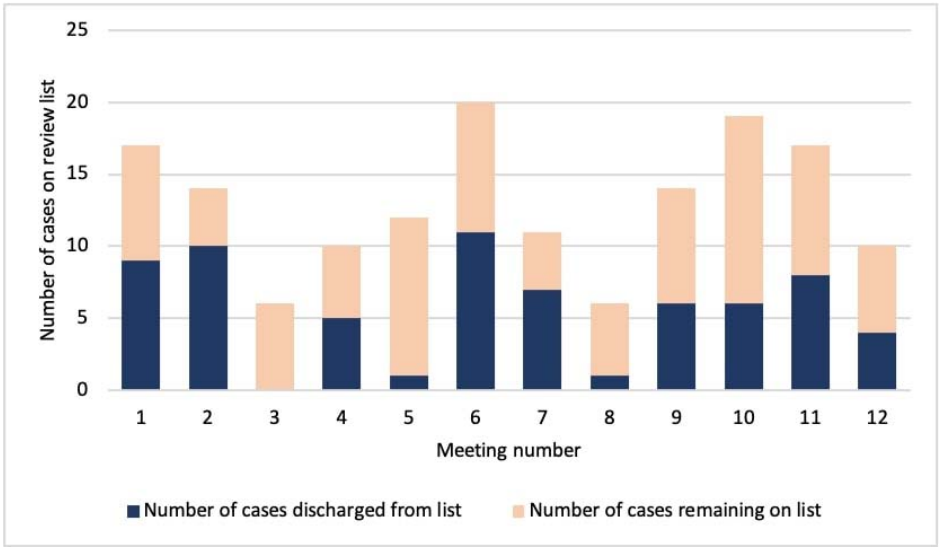

Fig 1. Number of cases discussed per meeting, with subdivision into how many were discharged or remained on the review list.

A total of 156 cases were discussed over the 12 weeks, 68 of which were discharged in this period. Fig 2 shows the reasons for discharge from the MDT follow up.

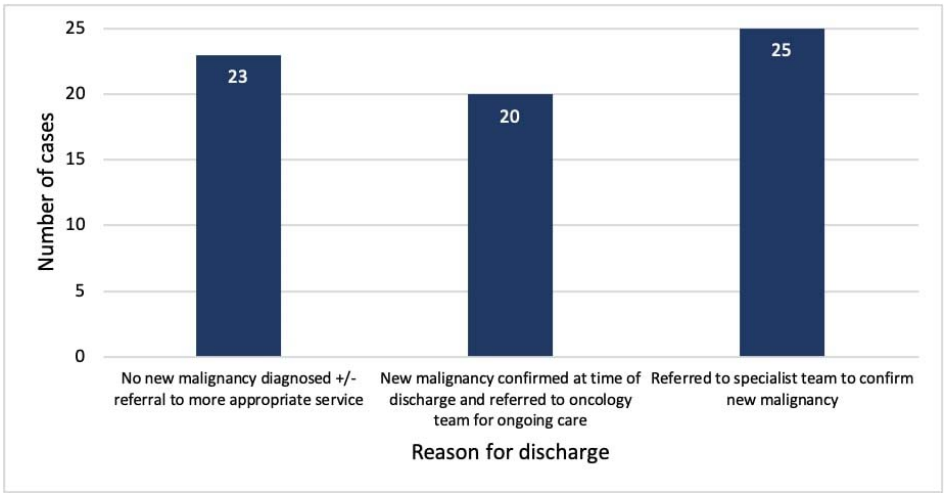

Fig 2. Reasons for discharge from MDT follow up.

Analysis of cases that resulted in a new malignancy revealed that colorectal cancer was the most commonly diagnosed (21.8% of the new malignancies). This was followed by respiratory, neurological, pancreatic, upper gastrointestinal and haematological malignancies (each making up 12.5% of total new malignancies diagnosed).

Conclusion

With an increasing number of patients presenting to SDEC units, prioritising endorsement and follow up of time-critical investigations requires careful coordination and systems in place to ensure clinicians are alerted to completed tests in an acceptable time frame. Early acute oncology team involvement can help streamline patient management.

Our interdisciplinary AAU-AOS MDT has been created to address this patient group.

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Improving patient safety during medical handovers at Torbay Hospital

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[A]Torbay Hospital

Introduction

Torbay Hospital is a 500-bed district general hospital in Devon.[1] Medical handovers occur twice daily but are not standardised. They involve medical ward doctors and the acute medical team responsible for admissions. This step in the patient pathway provides an opportunity for information to be lost, compromising patient care. This is particularly relevant for unwell patients – both new admissions and inpatients.

Colleagues' anecdotal comments suggested that unstructured handovers made it challenging to share information effectively; concerns were raised about patient safety. Research found that communication errors contributed to around two-thirds of notable clinical incidents; over half of these related to handovers.[2] The National Institute for Health and Care Excellence concludes that structured handovers can result in reduced mortality and length of admission, and improve staff satisfaction.[3]

The project aim was to improve the evening medical handover by designing and implementing a standardised handover proforma. We looked to improve doctors' satisfaction with handovers and their opinions on patient safety, as judged by their survey responses.

Materials and methods

The study gathered quantitative and qualitative data through surveys; asking doctors' opinions on important aspects of medical handovers based on the Royal College of Physicians Acute Care Toolkit.[4] Surveys were distributed to doctors of various grades at the evening handover. They comprised eleven statements with a Likert scale of 1–10 (1 being strongly disagree and 10 strongly agree). The first 20 responses were analysed by calculating a mean rating for each statement, to ascertain baseline data and post-intervention data.

The primary intervention was implementing a proforma to be used at every evening handover, which the night registrar leading the handover could follow. It was brief to increase engagement and was printed and displayed in the handover room.

Results and discussion

Post-intervention data showed improvements in mean ratings for several statements: 'Handovers have a positive effect on patient safety' n=7.4 to n=8.6 and 'I feel able to handover unwell patients' n= 8.6 to n= 9.4. Fig 1 displays the changes in mean ratings for all statements. Qualitative data highlighted the proforma's variable use. A second intervention therefore involved distributing a poster of the proforma to registrars (Fig 2), raising awareness and encouraging consistent use. Feedback from this cycle displayed satisfaction with the proforma, but concerns remained regarding inconsistent implementation. A third cycle is ongoing to address this inconsistency.

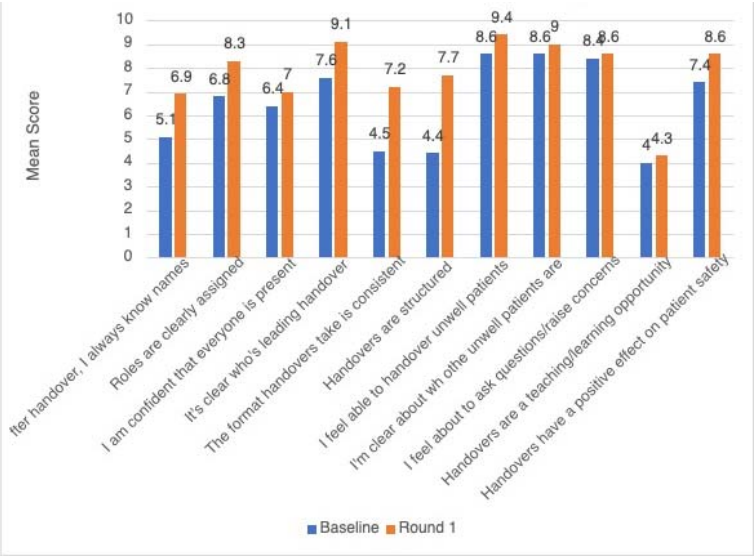

Fig 1. Mean pre- and post-intervention scores for survey statements.

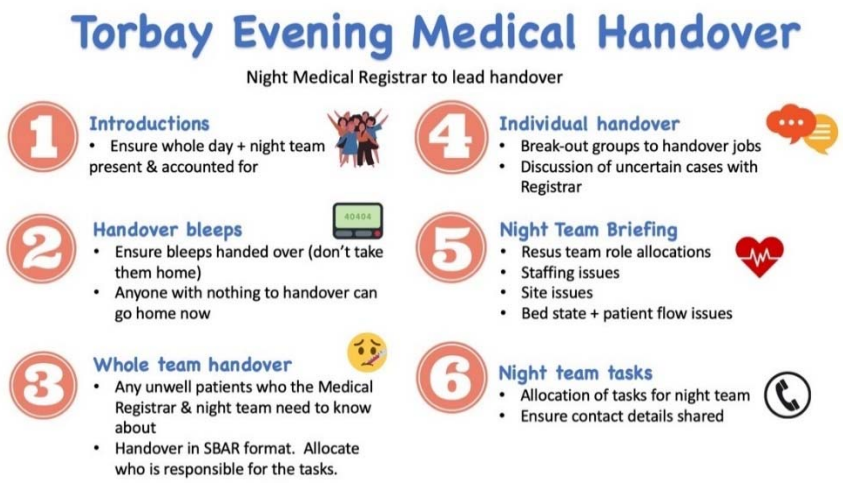
Torbay Evening Medical Handover
Night Medical Registrar to lead handover
1
Introductions
• Ensure whole day + night team present & accounted for
2
Handover bleeps
• Ensure bleeps handed over (don't take them home)
• Anyone with nothing to handover can go home now
3
Whole team handover
• Any unwell patients who the Medical Registrar & night team need to know about
• Handover in SBAR format. Allocate who is responsible for the tasks.
4
Individual handover
• Break-out groups to handover jobs
• Discussion of uncertain cases with Registrar
5
Night Team Briefing
• Resus team role allocations
• Staffing issues
• Site issues
• Bed state + patient flow issues
6
Night team tasks
• Allocation of tasks for night team
• Ensure contact details shared

Fig 2. Poster of handover proforma.

Conclusion

While it's difficult to measure the project's impact on patient safety, results show that staff felt an improvement in communication and, as detailed above, communication between staff impacts patient safety.

This project highlighted that not all interventions create the expected outcome. Confounding variables impacted the project's success; change of handover venue made the poster more inaccessible and this likely affected its use. Furthermore, the junior doctor cohort changed during the project, according to the national training programme. This new cohort, with different levels of experience, may have impacted the results.

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Subarachnoid haemorrhage – managing the workflow – secondary/acute care

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Introduction

Subarachnoid haemorrhage (SAH) is a type of haemorrhagic stroke caused by bleeding into the subarachnoid space around the brain. The incidence of SAH in the UK is approximately 8 per 100,000 population.[1] SAH is commonly caused by rupture of a cerebral aneurysm.[2] Other causes include head trauma, vascular malformations, hypertension or coagulation disorders. Treatment options are mostly surgical, by clipping the base of the aneurysm or by endovascular coiling, placing a platinum coil in the aneurysm via an intra-arterial catheter to initiate thrombosis. Overall, the principal aim is to prevent further bleeding.[3] Outcomes are usually poor if not managed in a timely and adequate manner.

Methodology

- We used the NCEPOD subarachnoid haemorrhage audit toolkit to assess the trust's performance in patients.[4]
- 11 cases of confirmed SAH were identified between November 2020 and October 2021, by searching the specific coding for SAH in adults.
- Data were collected via retrospective examination of medical notes of these patients.
- Analysis on following standards:
  1. All patients presenting with acute severe headache should have thorough neurological examination performed and documented.
  2. A CT scan of the head should be performed immediately in such presentations, as defined by the *National clinical guideline for stroke*.[5]
  3. Securing the ruptured aneurysm within 48 hours.
  4. Organ donation rates following fatal SAH should be audited and policies adopted to increase the rate.

Results

Standard 1:

Numbers denote percentage (%) compliance.

Is there evidence that the patient underwent a neurological examination during the first 24 hours of arrival to acute/secondary care prior to transfer?	100
Past medical history	100
Assessment of consciousness level (using GCS)	70
Assessment of pupil responses	78
Fundoscopy	0
Assessment of motor functions	100
Assessment of sensory functions	70
Was the neurological examination satisfactory?	60
Was the neurological examination adequately documented?	60

Standard 2: 100% of patients audited had a CT scan performed; however, only 40% had a CT scan performed within 1 hour after arrival at hospital.

Standard 3: Of the 11 patients audited, only two (18%) were accepted for transfer to a neurosurgical unit. Data were incomplete for one of these patients; the other patient was transferred within 24 hours of arrival to hospital, and had a procedure within 48 hours of onset of the subarachnoid haemorrhage.

Standard 4: Our audit was not able to answer this question, as the one patient who died after their SAH was not suitable for organ donation.

Conclusion

All patients had a neurological examination performed within the first 24 hours of admission; however, only 60% of these were complete or adequately documented. The Glasgow coma score (GCS) was only recorded in 70% of patients, despite it being an important prognostic indicator.

Only 40% of patients audited had a CT scan within 1 hour of arrival to hospital. This is an important area for the trust to improve upon; however, these data may also have been influenced by the means of data collection, as many patients did not present with classical symptoms of SAH and thus were not initially assessed to require an urgent CT scan of their head.

There is limited data on the trust's compliance with the audit standard of securing ruptured aneurysms, probably because of small sample size, not being a neurosurgical centre and most patients being managed conservatively.

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Evaluation of patients' suitability for a treatment break from bisphosphonates

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Bisphosphonates have been widely used in the treatment of osteoporosis, with data demonstrating efficacy in fracture risk reduction over 3–5 years of treatment. Although bisphosphonates are generally safe and well tolerated, there is a well-documented relationship with adverse effects such as osteonecrosis of the jaw, atypical femoral fractures, atrial fibrillation, oesophageal cancer and renal impairment after prolonged use. Due to this dose–response relationship and that bisphosphonates accumulate in bone with persistent antifracture efficacy after therapy is stopped, it is reasonable to consider a drug holiday.

SMART improvement aim: To increase the number of patients taking a drug holiday from bisphosphonates where appropriate (ie patients not meeting the exclusion criteria). This quality improvement project (QIP) was carried out at a GP practice in Coventry (Clay Lane Medical Practice).

The search was for all patients currently at the practice who have been started on bisphosphonate therapy in the past 12 months. This returned a total of 61 patients. From these, the search was for patients who met the exclusion criteria (ie $\geq$7.5 mg prednisolone, fragility fractures during bisphosphonate treatment, T score $\leq$–2.5 after 3–5 years of treatment). This returned a total of 23 patients. These patients were divided into low, medium and high risk, according to the Derbyshire Joint Area Prescribing Committee (JAPC) guidelines.

13 patients were found to be at low risk, four at moderate risk and six at high risk.

Low-risk patients can stop treatment. They require reassessment using FRAX/DEXA if they suffer a further fracture or their risk factors alter. They should continue to take calcium and vitamin D supplements during the treatment break. Moderate-risk patients require assessment of bone mineral density for consideration of a treatment break with a DEXA. Patients with a femoral neck T score $\geq$–2.0 have a low risk of vertebral fracture and are unlikely to benefit from continued treatment. These patients should discontinue therapy, restarting when and if indications for therapy are met. High-risk patients should continue therapy with a bisphosphonate if no contraindications or intolerance for a further 5 years.

The patients at the practice who have been flagged up as low risk will be contacted by the community pharmacist, a medication review will be conducted, and the patient will be commenced on a treatment break if appropriate. Furthermore, the patients who fall into the moderate-risk category will also be contacted and a DEXA scan will be arranged to decide whether a treatment break is suitable. A practice-specific template based on the Derbyshire JAPC guidelines will be created for the clinicians at the practice. This will make it simpler to advise the clinicians about appropriate management and facilitate decision-making. To ensure that no patients are missed, the audit should be reviewed by the community pharmacist annually. This should be done by flagging all patients at the practice who have been commenced on bisphosphonate treatment in the past 12 months, applying the exclusion criteria and then sorting into low, moderate and high risk.

Assessment and improvement of medical handover at Milton Keynes University Hospital

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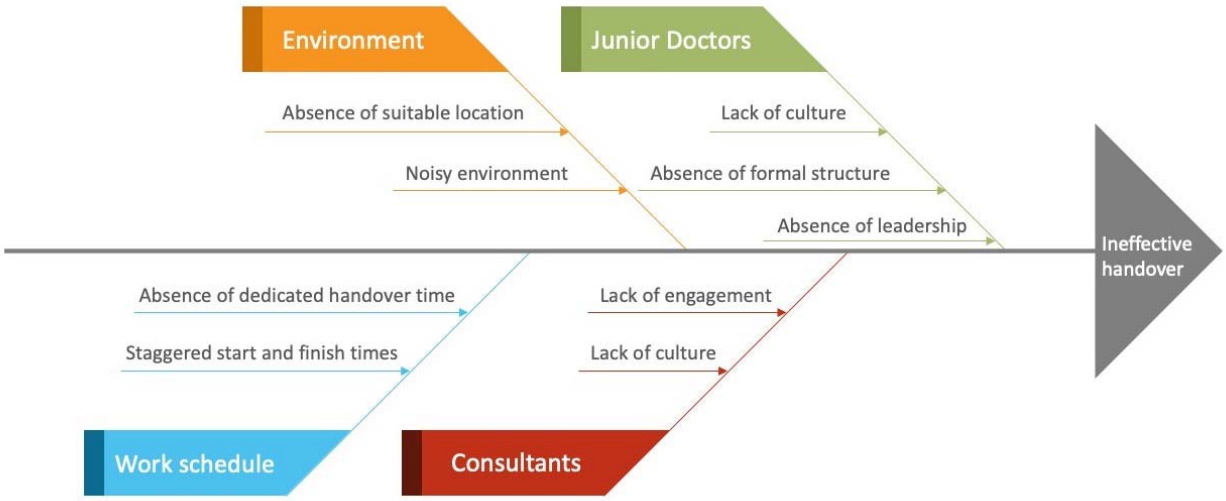
Introduction

An effective handover is widely accepted as an essential tool for improving efficiency, patient safety and patient experience.[1–3] A structured handover also improves confidence and perception of safety among clinicians.[4,5] Following social distancing restrictions, movement of ward locations, and rota changes during the COVID-19 pandemic, there was no routine, structured clinical handover between day and night shifts of the medical team at our hospital. Over a 6-month period, we aimed to reinstitute a formal, structured handover between all on-call shifts in the evening and on weekend mornings.

Methods

We undertook a root cause analysis to assess the reasons for the lack of an effective handover (Fig 1). Data were then collected over four periods between August 2022 and January 2023 by contacting the on-call medical registrar after each shift or set of shifts. We recorded the occurrence of handover, its location, attendance and any other comments. A comprehensive range of interventions were subsequently implemented to tackle each identified root cause across multiple plan, do, study, act (PDSA) cycles. The principles outlined in the RCP handover toolkit were used to guide interventions.[1] Changes were communicated through email, personal messages, posters and by incorporating details of handover into the standard operating procedure and departmental induction. The on-call rota was redesigned to include dedicated time to facilitate handover. Doctors were surveyed prior to commencing data collection and after implementation of the above interventions to assess perception of the medical handover.

Fig 1. Root cause analysis for ineffective handover.

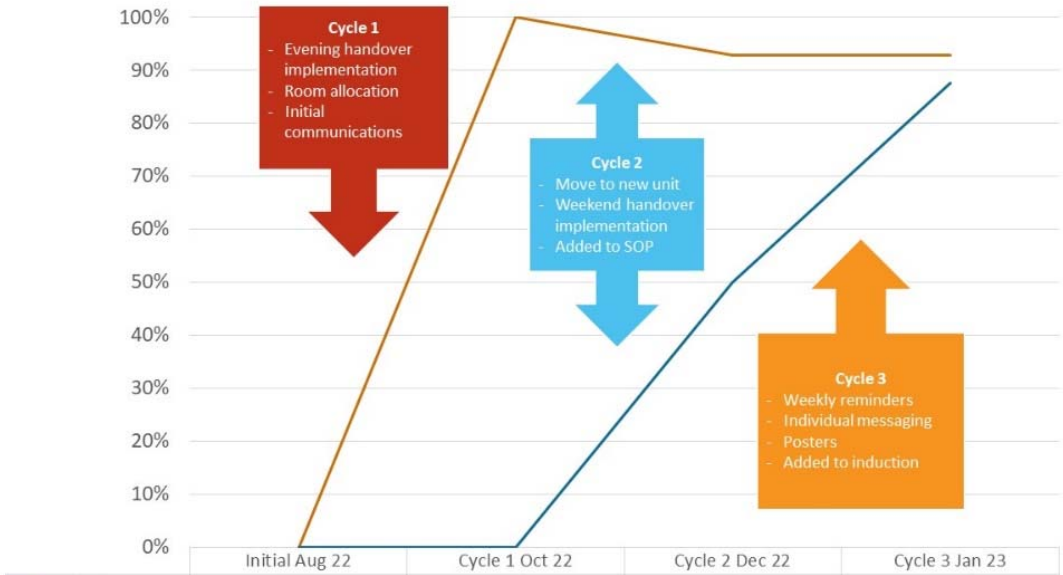


Results

There was no formal structured handover being conducted in August 2022. There was an improvement in the number of formal handovers being conducted, to 88% of weekend morning and 93% of evening handovers, as interventions were implemented to address each identified root cause (Fig 2). Perception of safety improved after a regular structured handover was established. A minority of doctors surveyed felt that handover was somewhat or very safe prior to implementation. Once a formal handover was

established, this improved from 26% to 79% for weekend morning handover and from 33% to 89% for evening handover. Of those surveyed, 89% felt that the implementation of a formal structured handover between medical on-call shifts had improved patient safety.

Fig 2. Formal handovers conducted and interventions implemented.



Conclusion

Multiple factors including rota design, environment and junior doctor culture had resulted in inadequate handover practices in our Medicine Department. Implementation of realistic and sustainable improvement strategies resulted in the establishment of formal clinical handover in the evenings and at weekends. A structured and regular handover improved the perception of safety among clinical staff. Despite interventions including reminders to groups and individuals, formal handover still did not occur on every occasion. We will undertake ongoing efforts to fully embed handover in the department culture.

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The medical on-call handover – more than just a meeting

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In one of the largest and busiest teaching district hospitals in the UK situated in the West Midlands, the 94-bedded acute medical unit has a rapid turnover of patients. The journey of a medical admission starting from the emergency department or primary care until discharge can vary in length, with patients rapidly distributed to general medical wards across the hospital. The management of these inpatients along with new continuous medical admissions falls under one small but pivotal team at night, running a large portion of the hospital for 12.5 hours. This highlights the importance of an efficaciously functioning team with a positive morale to partake, thrive and develop from these demanding on-call commitments. We recognised that the medical night handover in our trust consisted of a range of professionals, but lacked essence of teamwork and ran in a disjointed manner.

We designed a quality improvement project (QIP) identifying the problem and analysing it further using a fishbone diagram (Fig 1) to determine cause and effect of unfavourable factors in the meeting. A questionnaire assessed how the current medical handover meeting was perceived by attendees, including doctors of all grades, advanced nurse practitioners and resus team members. Questions related to the night handover included whether there were clear introductions of roles and responsibilities, a recognisable identified person leading the handover, presence of any interruptions, identification of any operational issues including bed state, and an overall impression of whether the handover was run in an organised manner. A score out of 5 was calculated using the above points plotted on a run chart. Baseline data included a median response of 2/5 from 30 respondents. Our intervention included a handover template incorporating pertinent handover subheadings, reducing chances of missing any important patient handover details, which was implemented to be followed for the duration of the meeting by the lead registrar. A subsequent survey of 30 respondents demonstrated an increase in our median score to 3.5/5 (Fig 2). Identification of operational issues, including bed state situation, remained unchanged; however, improvement in structure of the handover, better teamwork, training environment and support for members of the on-call team at night increased, as per our qualitative data.

The medical on-call handover takes place twice daily in all hospitals as shifts change. The GMC states that ‘doctors must contribute to the safe transfer of patients between healthcare providers’ and hence it is vital to have a structured, good-quality handover.[1] Lapses in information in the handover lead to mistakes being made, which increase morbidity and mortality.[2] Our QIP shows scope for improvement in discussing hospital bed capacity state at medical handover meetings for awareness of juniors, which can reduce length of hospital stay and improve patient flow in the current pressured NHS climate.[3] Apart from increasing patient safety, good communication and teamwork, handover meetings provide an additional educational opportunity for doctors in training, and this should be notable.

Fig 1. Fishbone diagram outlining multiple causes for an effect.

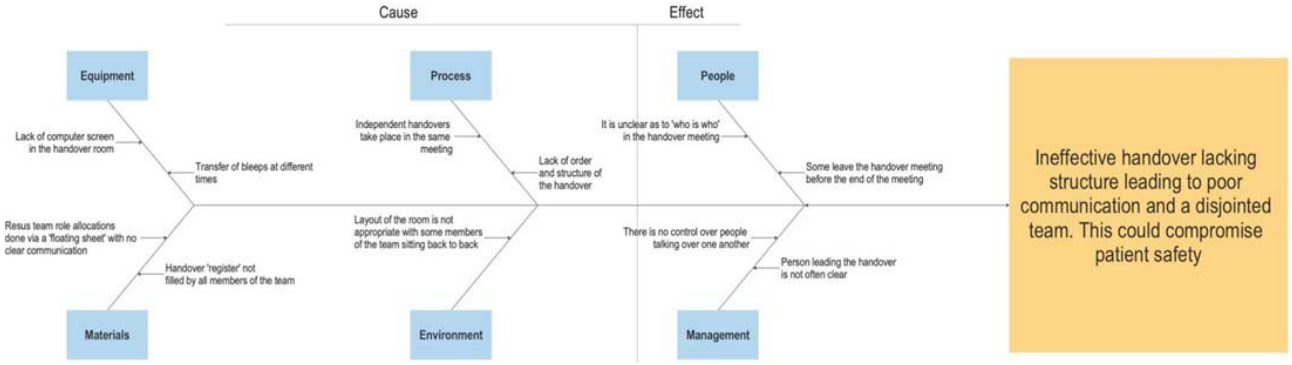
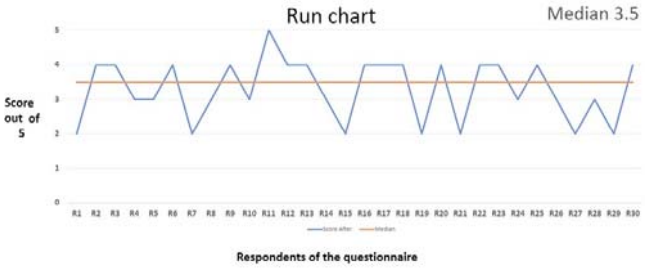

Cause
Effect
Equipment
Process
People
Lack of computer screen in the handover room
Transfer of bleeps at different times
Independent handovers take place in the same meeting
Lack of order and structure of the handover
It is unclear as to 'who is who' in the handover meeting
Some leave the handover meeting before the end of the meeting
Resus team role allocations done via a 'floating sheet' with no clear communication
Handover 'register' not filled by all members of the team
Layout of the room is not appropriate with some members of the team sitting back to back
There is no control over people talking over one another
Person leading the handover is not often clear
Ineffective handover lacking structure leading to poor communication and a disjointed team. This could compromise patient safety
Materials
Environment
Management

Fig 2. Scores out of 5 from respondents post-interventions with a median score of 3.5.



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Postural hypotension quality improvement project – how good are we at measuring it?

Authors: Natalia Cernovschi-Feasey,[A] Cindy Eng,[A] Htin Aung[A] and Jessica Jozefczak[A]

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Background

Postural hypotension is a frequent cause of syncope, which contributes to morbidity, disability and death in cases of injury in the frail and older population.[1] We identified variation in methods of measuring lying and standing blood pressure (LSBP) by healthcare staff, which would have an influence on the results and treatment provided. This quality improvement project (QIP) aimed to assess the consistency of LSBP measurement and sustainability of this practice across various clinical areas.

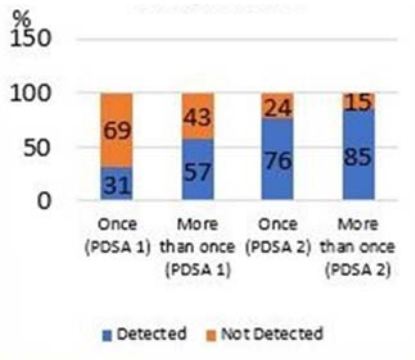
Methods

A team of junior and senior doctors working in an acute medicine setting conducted this project. A self-designed survey was distributed among healthcare staff at different grades in several departments who are involved in measuring LSBP. The data were collected and analysed using Excel and displayed in pictorial graphs. Our intervention was presenting the project outcomes at the health board grand round, followed by brief oral educational sessions based on an RCP poster 'Falls and Fragility Fracture Audit Programme'. We completed two plan, do, study, act (PDSA) cycles and implemented our changes.

Results

57 staff members from different areas (emergency department, acute medical and surgical wards) participated in this study. Pre-intervention, only 47% of staff measured standing blood pressure (BP) between 1 and 3 mins. Post-intervention this percentage almost doubled, reaching 78%. We found that among staff who measured standing BP more than once, 57% detected postural drop and around 31% of staff possibly detected postural drop in those who measured standing BP once. PDSA2 showed an improvement of almost 20% in detecting postural drop when BP was measured more than once.

Fig 1. Frequency of measuring BP vs detecting postural drop.



Conclusions

The project showed that clinical measurement of LSBP can be very variable and is operator dependent. We identified weak areas that showed improvement after implemented interventions and this will be maintained by the practice-monitor audit and continuous skills refreshment sessions.

Reference

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Ambulatory investigation of palpitations, pre-syncope and syncope with AliveCor KardiaMobile and Wellysis S-Patch – a local joint working project

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Introduction

Palpitations, pre-syncope and syncope are common presentations to cardiology. Frequently conventional Holter monitors or event recorders do not lead to symptom–rhythm correlation, therefore patients often present to the emergency services. The aims of this project were: (i) to demonstrate symptom–rhythm correlation with AliveCor KardiaMobile and Wellysis S-Patch, (ii) to demonstrate diagnosis for patients presenting with symptoms of palpitations, pre-syncope and syncope, (iii) to evaluate patient experience.

Materials and method

Patients referred to our Cardiology Department with symptoms of palpitations were offered an KardiaMobile 6L ECG for ambulatory monitoring. Patients uploaded ECG recordings via their smartphone to a software portal over a 3-month period, where the diagnosis made by the software algorithm was confirmed by the project team. Patients with symptoms of pre-syncope and syncope were offered an S-Patch for continuous ambulatory ECG monitoring over 21 days. Patient demographics, diagnosis, symptom–rhythm correlation, management and patient experience were evaluated.

Results and discussion

Out of 122 patients, 14% (17/122) were excluded as the device was not utilised either due to lack of symptoms or software concerns. Data of 105 patients (78 KardiaMobile, 27 S-Patch) were analysed. Participants' mean age was 54 years (range 17–89 years), 65% women, 96% white British, 43% did not take any medication. Palpitations was the presenting complaint in 76.2% (80/105), pre-syncope in 14.3% (15/105) and syncope in 9.5% (10/105). 40% (39/105) experienced symptoms a couple of times per year, 20% (20/105) monthly, and 40% (39/105) multiple times per month. Symptom–rhythm correlation was achieved in 80% (84/105). Sinus rhythm (SR) was detected in 63% (66/105), atrial fibrillation (AF) in 10.5% (11/105 – all KardiaMobile), supraventricular tachycardia in 10.5% (11/105, 10/11 with KardiaMobile) with subsequent ablation in 8.6% (9/105). Mean duration of symptom–rhythm correlation with KardiaMobile was 41 days, mean number of uploaded ECGs was 26. The S-Patch was *in situ* for 504 hours (21 days), providing analysable recordings with a mean length of 268 hours (11 days). Feedback was obtained in 88% (92/105). In most cases (78%), no issues were reported; 10% reported difficulties using software and 6.7% had problems with connectivity. 52% of patients using the S-Patch reported issues:skin irritation in 30% (8/27), resulting in premature termination of monitoring. The service was reported as very good or excellent in 75% (79/105) of cases.

Conclusion

The project demonstrates the feasibility of ambulatory ECG monitoring service with a high diagnostic yield and excellent patient satisfaction. The National Institute for Health and Care Excellence (NICE)-approved KardiaMobile has a good analysis algorithm and user-friendly software. Patients using the S-Patch reported difficulties in using the software more often, and skin irritation significantly limited its use beyond a few days.

Frequent detection of SR suggest potential for cost savings if these devices were used in the community and referrals to cardiology were reserved for those with detected rhythm abnormality. KardiaMobile offers

a high yield of AF detection within 6 weeks. Early diagnosis of AF and subsequent anticoagulation can prevent stroke and subsequent costs associated with stroke admission and disability.

Competing interests

Part of a Joint Working Programme with Daiichi Sankyo who financially supported this project with £37,400 to purchase devices and software licence. No conflict of interest.

Improving hyperacute stroke pathways at two specialist cardiothoracic centres (Royal Brompton Hospital and Harefield Hospital)

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Introduction

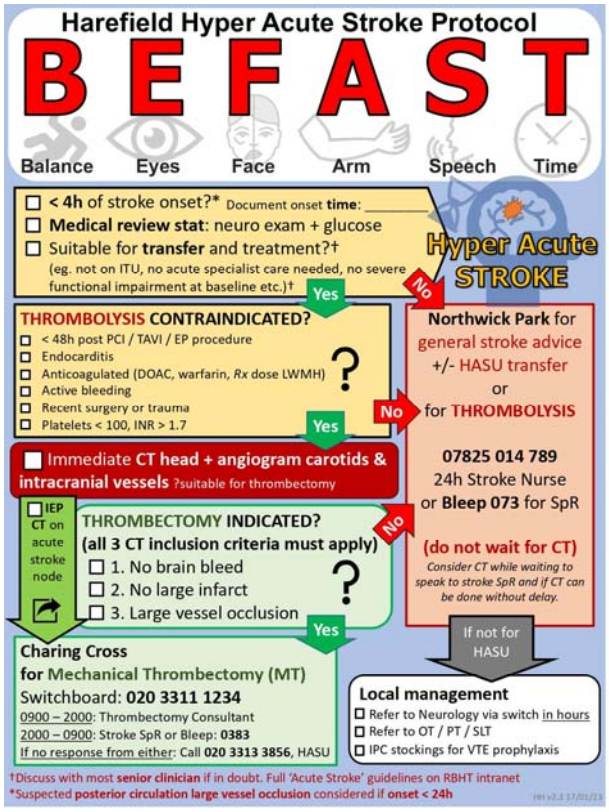
Following a new stroke, care is best delivered on hyperacute stroke units (HASUs), where early multidisciplinary input has been shown to improve prognosis and reduce morbidity.[1] HASUs are also able to safely deliver reperfusion therapies such as thrombolysis or thrombectomy. These can drastically improve outcomes for suitable patients, but are subject to narrow therapeutic time windows and have potential risks and contraindications.

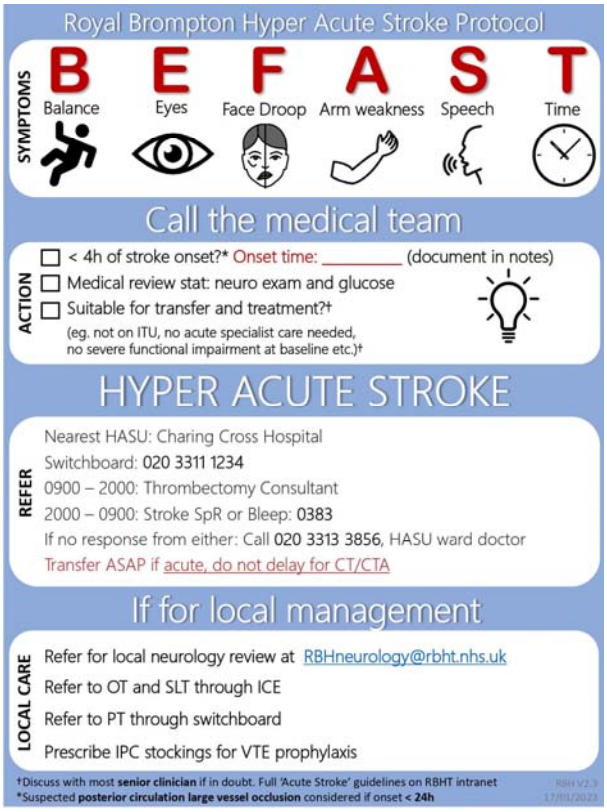
An estimated 5% of new strokes occur in patients already hospitalised for another condition.[2] Stroke is especially prevalent in patients undergoing cardiac procedures and cardiothoracic surgery, owing to shared risk factors and periprocedural complications. The Royal Brompton and Harefield hospitals are specialist cardiothoracic centres aligned for excellent cardiothoracic care, but lack on-site access to a HASU. This quality improvement project addresses key challenges in managing acute stroke at these hospitals.

Materials and methods

Clinical staff were interviewed and asked to complete a questionnaire to document current practice. Key targets for improvement were identified based on initial responses. New guidance posters (Fig 1) were created, outlining optimal diagnostic and referral protocols for both hospitals. Also incorporated was the stroke recognition tool 'BEFAST' (Balance, Eyes, Face, Arm, Speech, Time), which was previously reported to be more sensitive at detecting posterior circulation stroke than the conventional 'FAST'.[3] Posters were distributed around key clinical areas, accompanied by teaching sessions and governance meeting presentations. The staff questionnaires were repeated following these interventions.

Fig 1. New guidance posters outlining the hyperacute stroke pathway and optimal diagnostic and referral protocols for both hospitals.


Harefield Hyper Acute Stroke Protocol
B E F A S T
Balance Eyes Face Arm Speech Time
< 4h of stroke onset?* Document onset time:
Medical review stat: neuro exam + glucose
Suitable for transfer and treatment?†
(eg. not on ITU, no acute specialist care needed, no severe functional impairment at baseline etc.)†
Yes
No
Hyper Acute STROKE
THROMBOLYSIS CONTRAINDICATED?
< 48h post PCI / TAVI / EP procedure
Endocarditis
Anticoagulated (DOAC, warfarin, Rx dose LWMH)
Active bleeding
Recent surgery or trauma
Platelets < 100, INR > 1.7
Yes
No
Northwick Park for general stroke advice +/- HASU transfer or for THROMBOLYSIS
07825 014 789
24h Stroke Nurse or Bleep 073 for SpR
(do not wait for CT)
Consider CT while waiting to speak to stroke SpR and if CT can be done without delay.
Immediate CT head + angiogram carotids & intracranial vessels ?suitable for thrombectomy
IEP CT on acute stroke node
THROMBECTOMY INDICATED?
(all 3 CT inclusion criteria must apply)
1. No brain bleed
2. No large infarct
3. Large vessel occlusion
No
Yes
If not for HASU
Charing Cross for Mechanical Thrombectomy (MT)
Switchboard: 020 3311 1234
0900 – 2000: Thrombectomy Consultant
2000 – 0900: Stroke SpR or Bleep: 0383
If no response from either: Call 020 3313 3856, HASU
Local management
Refer to Neurology via switch in hours
Refer to OT / PT / SLT
IPC stockings for VTE prophylaxis
†Discuss with most senior clinician if in doubt. Full 'Acute Stroke' guidelines on RBHT intranet
*Suspected posterior circulation large vessel occlusion considered if onset < 24h


Royal Brompton Hyper Acute Stroke Protocol
SYMPTOMS
B Balance
E Eyes
F Face Droop
A Arm weakness
S Speech
T Time
Call the medical team
ACTION
< 4h of stroke onset?* Onset time: _____ (document in notes)
Medical review stat: neuro exam and glucose
Suitable for transfer and treatment?†
(eg. not on ITU, no acute specialist care needed, no severe functional impairment at baseline etc.)†
HYPER ACUTE STROKE
REFER
Nearest HASU: Charing Cross Hospital
Switchboard: 020 3311 1234
0900 – 2000: Thrombectomy Consultant
2000 – 0900: Stroke SpR or Bleep: 0383
If no response from either: Call 020 3313 3856, HASU ward doctor
Transfer ASAP if acute, do not delay for CT/CTA
If for local management
LOCAL CARE
Refer for local neurology review at RBHneurology@rbht.nhs.uk
Refer to OT and SLT through ICE
Refer to PT through switchboard
Prescribe IPC stockings for VTE prophylaxis
†Discuss with most senior clinician if in doubt. Full 'Acute Stroke' guidelines on RBHT intranet
*Suspected posterior circulation large vessel occlusion considered if onset < 24h

Results

The questionnaire was completed by 41 respondents at baseline, and by 57 respondents following interventions. The key results are summarised in Table 1. The percentage of respondents who self-rated ≥ 8/10 for confidence in recognising stroke increased from 39% at baseline to 70% following intervention. Awareness of the BEFAST tool increased from 0% to 56% of respondents following intervention. Respondents were more confident in following the acute stroke pathway following intervention; scored from 1–10, median confidence increased from 4 (3–6) (median (interquartile range)) to 8 (6–9]. The correct HASU referral centre was identified by 65% of respondents at baseline and increased to 89% following intervention. Intermittent pneumatic compression devices were correctly identified as the first-line venous thromboembolism (VTE) prophylactic method by 24% of respondents at baseline, increasing to 53% following intervention. Respondents listing all three of the key allied health professionals to involve in acute stroke care (physiotherapy, occupational therapy and speech and language) improved modestly from 51% to 60%.

Table 1. Responses to the questionnaire at baseline and after implementation of the poster, teaching sessions and governance meeting presentations

	Baseline	Post-intervention
How confident do you feel recognising stroke symptoms? (median (interquartile range))	7 (7–8)	8 (7–8)
How confident do you feel following the acute stroke pathway? (median (interquartile range))	4 (3–6)	8 (6–9)
Confidence score ≥8 (self-rated 1–10) in recognising stroke (% responses)	39	70
Confidence score ≥8 (self-rated 1–10) in using stroke pathway (% responses)	7.3	56
Which hyperacute stroke unit (HASU) should be contacted? (% correct)	65	89
What is the time window for stroke thrombolysis according to guidelines? (% correct)	50	53
What is the time window for stroke thrombectomy according to guidelines? (% correct)	38	44
What is the preferred VTE prophylaxis method according to stroke guidelines? (% correct)	24	53
What stroke recognition tools do you know? (% responding 'BEFAST')	0	56
What stroke recognition tools do you know? (% responding 'FAST')	76	35
What stroke recognition tools do you know? (% responding 'none')	22	3.5
Which allied health professionals should be involved in stroke care early? (% responding PT / OT / SALT)	51	60

Conclusion

This quality improvement project highlights many challenges to the provision of optimal hyperacute stroke care at detached cardiothoracic specialist centres. Creation of guidance posters incorporating the stroke recognition tool 'BEFAST' led to substantial improvements in staff confidence and knowledge of stroke care. Further work is planned to include incorporation into trust guidelines and creation of a brief e-learning induction module.

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Diffusion of responsibility: a clinical audit

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Diffusion of responsibility (DoR) can be defined as the psychological phenomenon where individuals who are part of a large group feel less responsibility to act within an emergency scenario.[1–3] This DoR can be seen in everyday clinical practice, and research has demonstrated its detrimental impact on patient safety. In 2005, a case study was reported that supports this phenomenon, in which Elaine Bromiley sadly passed away after admission to hospital for a routine day-case procedure. A 'cannot intubate, cannot ventilate' scenario was encountered by the anaesthetic team during induction to anaesthesia.[4,5] A coroner's inquest[6] highlighted the role of DoR in the incident, specifically commenting on the fact that no one took a decision to lead and initiate the standard emergency procedures, despite numerous experienced clinicians being present.

The aim of the current study was to identify whether DoR during morning handover has an impact on patient safety within the acute medical department. During handover, there is a discussion between numerous senior clinicians to decide whether the patients who presented to the department overnight should be handed over to specialties for assessment within 24 hours. Here, it is the responsibility of several providers to discuss patients defined as 'suspected stroke/TIA' with the stroke team; however, in the absence of standardised procedures, individual roles and responsibilities are frequently assumed rather than clearly spelled out. The current patient group included 16 individuals who were defined as 'suspected stroke/TIA' after being admitted to the medical assessment unit between the hours of 20:00 and 08:00. Data were collected over an 18-day period using standardised data collection proformas. The results of this audit reported that this particular handover method resulted in 16% of patients being missed on the post-take ward round by both the stroke and medical teams within 24 hours of admission. In the 2022 stroke National Institute for Health and Care Excellence (NICE) guidelines update,[7] two research recommendations for the management of stroke/TIA were proposed: (i) that aspirin administered within 48 hours of acute ischaemic stroke improves outcome compared with no treatment or early anticoagulation, and (ii) that 'immediate assessment' by a stroke clinician had both better health outcomes and lower costs than 'assessment within a week' for the entire population of suspected TIA, without the use of a risk stratification tool.[8] This evidence has been supported by a more recent study in 2022.[9] From this data collection and analysis, it was reported that DoR had a direct impact on patient safety and measures need to be put in place to abolish this phenomenon during morning handover within the acute medical department.

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Suboptimal lipid reduction and follow-up in patients with transient ischaemic attack: a need for a systematic, guideline-based approach to optimising lipid-lowering therapy

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Introduction

Lipid management in patients with transient ischaemic attack (TIA) is critical to minimise the risk of future TIA and recurrent ischaemic stroke. National Institute for Health and Care Excellence (NICE) guidelines stipulate that part of secondary prevention after TIA should be initiation of a high-intensity statin (generally atorvastatin 40 mg or 80 mg), with a target of reducing non-high-density lipoprotein cholesterol (non-HDL-C) levels by more than 40% from baseline. Further research advises that absolute values of <3.8 mmol/L for total cholesterol (TC) and <1.8 mmol/L for low-density lipoprotein cholesterol (LDL-C) levels should be targeted.[1] A full lipid profile (TC, HDL-C and non-HDL-C) should be measured at diagnosis and 3 months after commencing treatment to assess target success, with appropriate management adjustments such as increasing statin dose, discussing adherence or using a statin alternative if targets are not met.

Methods

Electronic clinic records were reviewed retrospectively using a data extraction template reflecting current national guidelines. Our study population included patients who attended the outpatient neurovascular clinic ('TIA clinic') at Cambridge University Hospitals between 1 January and 30 June 2020. We excluded patients with alternative diagnoses to TIA and those admitted to hospital from the clinic. We collected demographic data, comorbidities and statin prescription in the clinic. Baseline and repeat lipid profile values, as well as lipid management advice included in GP letters sent from the clinic, were recorded.

Results

67 of the included 168 patients were already taking a statin (Table 1). Of these patients, 23 (34.3%) were on atorvastatin 40 mg or 80 mg daily. At the point of diagnosis, 35 out of 133 (26.3%) patients who were either not prescribed a statin or not taking a high-intensity statin were started on atorvastatin 40 mg or 80 mg.

Baseline full lipid profiles were collected in 127/168 (75.6%) patients. Out of this group of patients, only 49 (38.6%) had a follow-up check by 6 months. More specifically, only 26 (20.5%) met the gold-standard timeframe of 3 months.

Of the patients who had a repeat check by 6 months, only 14 (28.6%) achieved TC <3.8 mmol/L or 18 (36.7%) LDL-C <1.8 mmol/L. Only 11 (22.45%) achieved the NICE-recommended >40% reduction in non-HDL-C, with an average reduction of 57.2% among those patients. Out of all 49 patients, the average was a 10.7% reduction.

Review of clinic letters revealed that 98 (58.0%) contained no lipid modification advice, only 18 (10.7%) recommended a target range and <3% mentioned a time point for repeat check (Table 2). No patient received any dietary advice on lipid management and none of the patients with inadequate lipid modification on statin therapy had been changed to a statin alternative by the time of data collection.

Conclusion

Appropriate management of hyperlipidaemia after TIA needs to be carefully considered in every patient. Better lipid modification advice from secondary care is imperative, including advice on statin dose and

timeframe for repeat lipid-profile check. Stricter adherence to guidelines could be implemented through a standardised care bundle by a dedicated secondary prevention service for ischaemic stroke and TIA patients.

Table 1. Basic demographics of TIA patients

TIA patients	
N	168
Median age, years (interquartile range)	77 (65–84)
Female, n (%)	87 (51.5)
Hypertension, n (%)	101 (59.8)
Hypercholesterolaemia, n (%)	61 (36.1)
Congestive cardiac failure, n (%)	2 (1.2)
Diabetes, n (%)	23 (13.6)
Ischaemic heart disease, n (%)	24 (14.2)
Previous stroke or TIA, n (%)	36 (21.3)
Taking a statin, n (%)	67 (39.6)

Table 2. Advice to primary care in neurovascular clinic letters

Assessment and advice to primary care	**n (%)**
Baseline lipid profile check	128 (75.7)
Lipid profile advice to primary care	71 (42.0)
Started on a statin, or advice to primary care to start	42 (41.6)
Target range for TC and LDL-C	18 (10.7)
Ask to recheck lipids at all	4 (2.37)
Ask to recheck lipids at 3 or 6 months	4 (2.37)

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Evaluating adherence to national diabetic ketoacidosis management guidelines within six hospitals across the UK

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Introduction

The Joint British Diabetes Societies (JBDS) published guidelines to assist diabetic ketoacidosis (DKA) management in adults in the UK.[1] DKA is not an uncommon topic to be audited; however, it is uncertain whether similar initiatives to assess differences across multiple centres exist. The aim of this project is to evaluate the differences in DKA management across hospitals in the UK.

Methods

Retrospective analysis of data from six hospitals across the UK identifed 443 DKA episodes. Data were collected between October 2021 and September 2022. All DKA admissions meeting the DKA criteria set by the JBDS guidelines were included. Patients who were <16 years of age and those who self-discharged before treatment completion were excluded. DKA was diagnosed as glucose >11 mmol/L, ketones >3 mmol/L or at ++ urine ketones, pH <7.3 or bicarbonate <15 mmol/L. Euglycaemic DKA was defined as all of the DKA criteria except glucose. Psueudonymised data on precipitating factors, fixed-rate intravenous insulin infusion (FRIII) and fluid prescriptions, hourly glucose and ketone monitoring were collected. Data were analysed using the Kruskal–Wallis test. Significance level was accepted at 95% ($p<0.05$).

Results

Participating hospitals are coded from A to F. Significant variations were found in fluid prescriptions (A – 92.1%, B – 101.3%, C – 89.7%, D – 76.0%, E – 98.3%, F – 115.5%; $p<0.001$), glucose monitoring (A – 103.1%, B – 86.1, C – 88.9%, D – 106.4%, E – 99.2%, F – 95.7%; $p<0.001$) and ketones monitoring(A – 71.5%, B – 85.1%, C – 70.0%, D – 59.3%, E – 65.0%, F – 85.7%; $p<0.001$). No significant difference was found between hospitals for FRIII prescription (A– 99.5%, B – 100.0%, C – 100.0%, D – 100.0%, E – 93.9%, F – 99.8%; $p=0.064$). The recorded precipitating aetiologies were intercurrent illness (36.6%), suboptimal compliance (32.1%), COVID-19 (3.6%), drugs (0.2%), immunotherapy (0.2%), first presentation of diabetes (8.8%), sepsis (2.9%), SGLT2 (0.9%), surgery (0.9%) and undetermined (12.0%).

Conclusion

Despite common precipitating factors and identical guidelines for DKA management across the centres involved, significant variation is observed between hospitals in the UK. A collective approach with a use of a centralised registry can enable shared better practice between healthcare professionals and their respective teams and lead to better patient outcomes.

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Improving oxygen prescription: effective delivery of the treatment for the lungs

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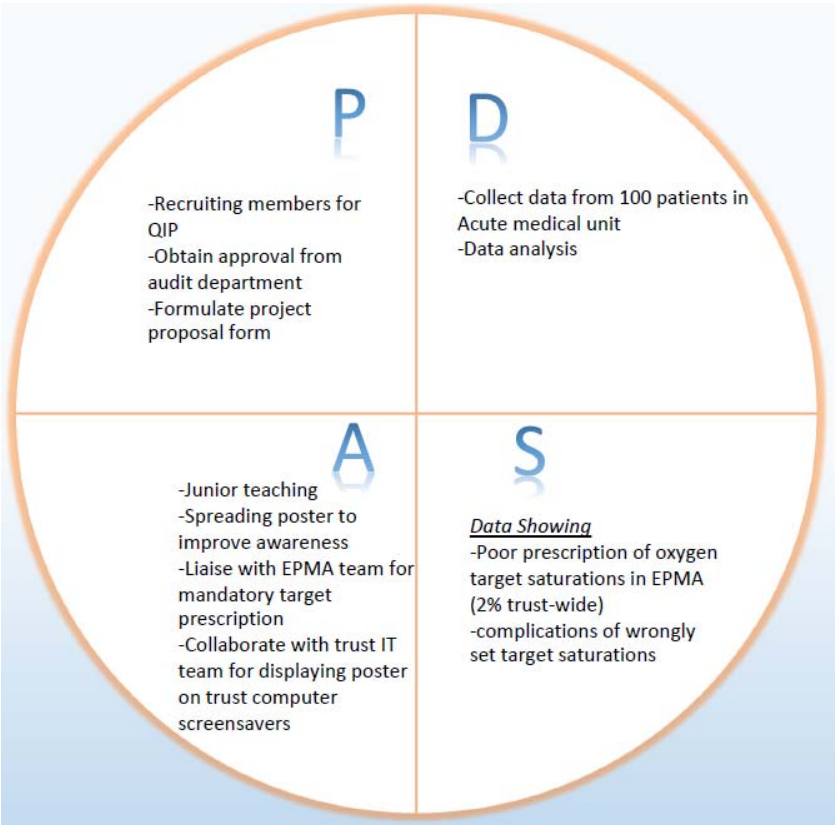
Introduction

Oxygen is a treatment for hypoxaemia. Due to wide variety of comorbidities, setting correct target saturation for each patient can be challenging, especially for junior doctors. On another note, most doctors in the hospital trust are not aware of the fact that target saturations can be electronically prescribed. Setting a wrong oxygen target can lead to unwanted consequences and eventually respiratory failure. We have implemented this project to improve junior doctors' knowledge of setting target saturation and promoting electronic oxygen prescription in the Queen Elizabeth Hospital King's Lynn NHS Foundation Trust.

Materials and methods

The project lasted from 20 April 2022 to 27 November 2022. For each plan, do, study, act (PDSA) cycle, approximately 100 patients admitted to the acute medical unit were randomly selected for data collection, and analysed data were compared against standards.[1] After each intervention, awareness was promoted by delivering junior doctor teaching. On the third cycle, we also spread posters across the trust to promote awareness.

Fig 1. PDSA cycle illustration of the QIP.


P
-Recruiting members for QIP
-Obtain approval from audit department
-Formulate project proposal form
D
-Collect data from 100 patients in Acute medical unit
-Data analysis
A
-Junior teaching
-Spreading poster to improve awareness
-Liaise with EPMA team for mandatory target prescription
-Collaborate with trust IT team for displaying poster on trust computer screensavers
S
Data Showing
-Poor prescription of oxygen target saturations in EPMA (2% trust-wide)
-complications of wrongly set target saturations

Results

Table 1. Results from first, second and third PDSA cycles

Criteria (standard 100%)	First cycle	Second cycle	Third cycle
Prescription on oxygen on ePMA	2%	14%	37%
Correct scoring of oxygen and oxygen saturation on NEWS chart	96%	96%	98%

Conclusion

There has been a significant improvement in oxygen prescription on the Electronic Prescribing and Medicines Administration (ePMA) system compared with the previous two cycle (from 2% in the first cycle to 37% in the third cycle).

We are planning to promote further awareness with the help of the IT team, by implementing an oxygen prescription section as a mandatory step in admitting patients onto ePMA. Including a mandatory section on the medical clerking booklet will be implemented as well.

In conclusion, we are proud to present our project which has significantly improved the percentage of overall electronic oxygen target prescription in the trust, hence preventing unwanted complications from an incorrectly set oxygen target.

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Impact of BioFire blood culture ID panel on empiric antimicrobial therapy for sepsis cases: a retrospective study

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Introduction

Sepsis is a fatal and often challenging condition, contributing to the morbidity and mortality of critically ill patients. Early clinical diagnosis and effective empirical antibiotic therapy play an immense role in their survival. Blood culture may take 48–72 hours to report the organism though traditional methods. However, the BioFire FilmArray blood culture identification (BCID) panel is an FDA-approved polymerase chain reaction assay that enables prompt and accurate identification of the organism within 1 hour, thus enabling early appropriate treatment and reducing morbidity, mortality and delayed hospital stay. This study evaluated the impact of a BCID panel on the empiric antibiotic therapy in critically ill patients in the intensive care unit (ICU) setting.

Materials and methods

This was a retrospective study on patients admitted to the ICU with positive blood cultures and ifor whom BioFire FilmArray (BCID) was done. Data were collected from patient case records in the health information system (HIS) and drug charts. Patients for whom BCID was not done were excluded from this study. The initial positive time, time to positivity, preliminary critical time, BCID ID, BCID resistance, isolated organism, resistance pattern, final critical informing time, empirical antibiotic, date and time of antibiotic modification and patient outcomes were collected.

Result and discussion

Out of the 45 patients with positive blood cultures, four (8.89%) samples were non-identifiable in BCID. These were non-fermenter, Gram-negative organisms other than *Pseudomonas* species or *Acinetobacter* species. The initial results of the BCID panel were available to clinicians within a short laboratory turnaround time of 3.2 hours, similar to other studies.[1,2] Empirical antimicrobials were modified based on BCID reports within an average time of 8.4 hours in 16 (39.02%) of the 41 patients with identifiable samples. 28 (68.30%) of these patients were found to have Gram-negative bacilli, of which the panel also helped in identification of significant number of isolates (34.50%) with resistance genes, enabling earlier additional infection prevention and control practices. Four patients had one more isolate additionally identified by routine culture methods (blood and MacConkey agar) that were not identified by the BCID panel. Among these, only one patient had an *Enterococcus* species isolated for which antibiotic therapy was not adequate. As a result of contaminated blood culture reports with contamination rates above 5%, patients receive unnecessary harmful antimicrobials.[3] One potential drawback of the BCID panel was its inability to detect organisms other than coagulase-negative staphylococci, such as *Bacillus* species, diphtheroids and micrococci, which have been included in the upgraded panel of the BCID2.[4] Overall patient mortality was 17 (41.46%) and five (12.20%) of all-cause mortality in the drug-modified group. Similar studies have revealed that sepsis increases the risk of death by 30–80%.[5]

Conclusion

BCID helps with earlier and accurate empirical choice of antibiotics for patients with bloodstream infections compared with conventional or phenotypic methods.

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Janus kinase inhibitor audit

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Introduction

Janus kinases (JAK) are intracellular tyrosine kinases that are activated by various receptors, becoming more popular for use in rheumatological conditions. The JAK/STAT pathway mediates transcriptional regulation of genes for cell proliferation, differentiation and activation as well as metabolic homeostatic regulation. These genes are critical for immune function and homeostasis. JAK inhibitors interrupt the JAK/STAT pathway. FDA and EMA guidance states that JAK inhibitors should be reserved as second-line treatment and in caution with patients at risk of VTE/cardiovascular events. We assessed our database of 145 patients on JAK inhibitors under the care of rheumatology for risk factors, compliance and appropriateness of treatment.

Materials and methods

145 patients' details were taken from a centralised database. Data were retrospectively collected from electronic patient care records, including previous biologics used, cardiovascular risk factors, compliance with blood monitoring and mean age at initiation of JAK inhibitor. Data were compared with a 2021 audit from the same database. Guidance was for monthly bloods for 3 months then 3 monthly, and compliance with this was also assessed via the electronic lab centre.

Results and discussion

13 patients were active smokers. 21 patients had a cerebrovascular accident / thrombotic event prior to initiation of JAK inhibitor. Four patients had a myocardial infarction or CVA during treatment. 85 patients were older than 50 years with two or more risk factors. 49 patients were 65 years or older with two or more risk factors. There were two deaths while on treatment – one due to bronchopneumonia, one due to congestive cardiac failure. 58 patients were not undergoing the advised blood monitoring due to either non-attendance or being lost to follow-up. Compared with the 2021 audit, with the introduction of a JAK blood clinic and results being emailed to teams – compliance with risk factor monitoring increased from 40% to 61%. The mean age of patients receiving JAK inhibitors had reduced from 76.5 years to 63.6 years from 2021 to 2022.

Conclusion

JAK inhibitors are high-risk medications and should be used with caution in patients with cardiovascular or thrombotic risk factors. Close monitoring of lipids/blood pressure needs to be ensured. This audit loop showed that, with the introduction of weekly blood monitoring email lists and a blood test protocol with a centralised database, compliance with risk factor monitoring did increase; however, it is still not at the level desired of 100%. Following this, it has been communicated to the patients who are no longer receiving communication and they have been resent appointments. We have introduced a patient education letter that is automatically sent out to patients if they do not attend two lipid and blood pressure monitoring appointments to educate them on the associated risks of the treatment. All teams will now be contacted if individual patients do not attend follow-up, so the appropriateness of a JAK inhibitor for these patients can be re-reviewed. JAK blood results are now emailed to a named doctor on each team to ensure that there is a designated doctor with responsibility to monitor the results.

Improving patient satisfaction with communication in teledermatology referrals

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Over the past few years, dermatology services have become a progressively more remote service. Therefore, teams managing patients on their wards, otherwise known as parent teams, are expected to communicate the dermatological referral and referral outcomes to the patient. Breakdown in this communication leads to poor self-management, and frustration and distrust in dermatological care and service. We aim to improve the number of patients who will be informed about their dermatological referrals and referral outcomes within 24 hours of dermatological input.

To measure patient satisfaction, we conducted a telephone questionnaire to patients who had a dermatology referral during their inpatient stay. The questionnaire was designed to assess the patient's understanding of their skin condition, their awareness of the dermatology referral and the dermatologist input. Based on the questionnaire, each patient was given a score that correlated with the level of understanding they had about their care, ie a point for each of the following, with a maximum score of 5 available. It is useful to identify which areas of communication are lacking to ascertain ideas for change.

A – Informed that they have a skin/dermatological condition

B – Informed that they have had a dermatological referral made

C – Informed of the diagnosis / informed about the diagnostic uncertainty if there is no diagnosis made yet

D – Informed of the dermatological medical plan

E – Informed if they have follow-up or that they do not need follow-up

Results demonstrated that 100% (20/20) of referrals were reviewed and an online plan was entered by the dermatology team within 24 hours. However, only 55% (11/20) knew the full plan from the dermatology team (received a 5/5 score on the questionnaire). This demonstrates that there is a significant communication deficit. A run chart designed for these data showed a large variation in scores from 0–5 and a median score of 2.5. I presented these data to the dermatology consultant meeting and a decision was made to change consultations from primarily remote to a mixture of telephone triages and face-to-face consultations, as well as an email to the acute medical unit team. This created a significant change in patient satisfaction with communication; there was a reduced variation in scores from 2–5 and the median score rose to 3.5, suggesting a rise in communication level. We aim to continue to perform more quality improvement measures in the future, including a hot clinic, to perform virtual clinics and to present our data in the grand round.

Fig 1. Getting more face time with the dermatology team: improving patient satisfaction with communication within the inpatient dermatology service.

Improving investigation for iron deficiency in patients with heart failure on the cardiology ward

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Introduction

Iron deficiency is common in patients with heart failure (HF) and can be present independently of anaemia. Iron deficiency is present in up to 55% of patients with chronic HF and in up to 80% of those with acute HF.[1–3] Iron deficiency in HF is associated with reduced functional capacity, impaired quality of life and poorer prognosis.[4]

According to the European Society of Cardiology 2021 guidelines, it is recommended that all patients with HF are regularly screened for iron deficiency.[5] Identifying iron deficiency could then lead to consideration of intravenous iron supplementation, which has been shown to reduce mortality and risk of hospitalisation.[6] Findings from these studies could also act as triggers to consider further investigations, such as in iron deficiency anaemia, to examine potential underlying causes.

The aim of this quality improvement project was to improve testing for iron deficiency in inpatients with HF. Interventions to improve testing were arranged if clinical practice did not meet standards (standards target 100%).

Materials and methods

All inpatients on the cardiology ward at our institution were studied over a period of 2–3 weeks at each plan, do, study, act (PDSA) cycle (three total PDSA cycles between August 2022 and January 2023). Data were collected on whether iron studies were requested (if not done in the past 3 months) and the number of patients identified as iron deficient. All patients with a diagnosis of HF were included in this study. Patients on end-of-life care were excluded.

Initial educational interventions included presenting findings to the cardiology team and poster summaries of findings; subsequent cycles included WhatsApp group reminders and posters of general cardiology common investigations.

Results and discussion

On the first PDSA cycle, 18/32 (56%) patients with HF underwent blood testing for iron studies. Following an educational intervention, 6/12 (50%) patients with HF were tested for iron studies, reflecting ongoing poor compliance with guidelines. On the third cycle, following additional interventions with online group reminders and posters, investigations for iron deficiency improved to 14/20 (70%), albeit still short of our target of 100%.

Table 1. Patients with HF on the cardiology ward, classified according to whether tests for iron deficiency were arranged across three PDSA cycles

	Cycle 1	Cycle 2	Cycle 3
Total HF patients	32	12	20
HF Patients tested for iron deficiency	18	6	14
HF Patient not tested for iron deficiency	14	6	6
HF Patients with iron deficiency (% of those tested)	11 (61%)	0 (0%)	6 (42%)
Percentage tested for iron deficiency	56%	50%	70%

Iron deficiency was underinvestigated across all PDSA cycles; this has important knock-on effects on clinical decision-making in both treating iron deficiency and considering investigations for underlying causes. Cycle 1's interventions did not impact testing for iron levels. Educational interventions following cycle 2 improved clinical practice, although investigation rates for iron deficiency did not reach our target. Potential barriers identified include frequent changes in ward clinicians and lack of time.

Conclusions

This project showed that our current practice in inpatients with HF with regards to investigating iron deficiency was not compliant with guidelines. Interventions to improve awareness of the importance of investigating for iron deficiency improved compliance, but did not reach the set target. Future studies will assess the long-term impact of the interventions and aim to increase investigation by experimenting with different interventions.

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An analysis of critical illness scores among patients admitted to intermediate care units (IMCUs) at a tertiary care hospital in Karachi, Pakistan

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Introduction

Intermediate care units (IMCUs) can act as 'step-up' units for patients who are admitted from the emergency department to these units instead of general wards, and can act as 'step-down' units for critically ill patients who were admitted in intensive care units.[1,2] In lower- and lower/middle-income countries (LMICs) like Pakistan, intensive care units (ICUs) are often limited and many times patients are admitted to IMCUs or high-dependency units (HDUs).[3] Most research on prognostication of acute medical conditions has been done in ICUs and not in IMCUs.[4] Hence, scoring systems for prognostication of such patients in IMCUs are absolutely essential.

The main aim of this study was to compare four critical illness scores, including the Acute Physiology and Chronic Health Evaluation II (APACHE II), Sequential Organ Failure Assessment (SOFA) and Simplified Acute Physiology Score II (SAPS II) and Modified Early Warning Score (MEWS), of acutely ill patients admitted to IMCU and compare the predictive accuracy of these four scoring systems in predicting mortality in patients.

Material and methods

This was a comparative cross-sectional study on patients aged ≥18 admitted to the IMCU of Aga Khan University Hospital from 2017–2019. All patients admitted to IMCU from the emergency room were included in the study. Patients' records were reviewed for demographic data, physiological and laboratory parameters.

Mean and standard deviation (SD) were used as quantitative variable, and frequency and percentage as categorical variable. Median score and interquartile range (IQR) for each severity score was calculated, due to their skewed distribution. Comparison between survivors and non-survivors were made using a two-sample T-test. Logistic regression analysis was also used to assess the relationship between different patient-related variables and in-hospital mortality. The statistical methods were verified, assuming a significance level of $p<0.05$.

Results

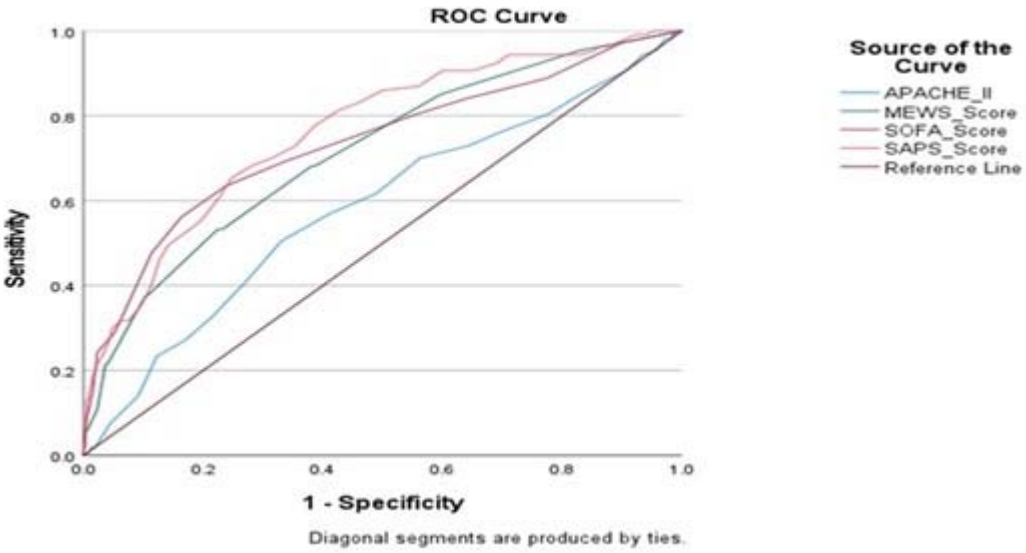
A total of 1,192 patients were admitted to the IMCU, for 923 of whom (77.4%) medical records were finally analysed. The mean (SD) age of participants was 62 years (±16.5), and 469 (50.8%) were women. The overall hospital mortality of patients managed in IMCU was 6.4% (59/923 patients). The median scores of APACHE II, SOFA, SAPS II and MEWS were 16 (IQR 11–21), 4 (IQR 2–6), 36 (IQR 30–53) and 3 (IQR 2–4) points respectively.

Table 1. Comparison of critical illness scores overall, among survivors and non-survivors in patients admitted to IMCU

Critical illness scale	Overall (n=923)	Survived (n=864)	Not survived (n=59)	p
APACHE II, median (IQR)	16 (11–21)	16 (11–21)	20 (13–25)	0.002
SOFA, median (IQR)	4 (2–6)	4 (2–5)	7 (4–10)	0.000
SAPS II, median (IQR)	36 (30–43)	35 (30–42)	44 (38–53)	0.000
MEWS, median (IQR)	3 (2–4)	3 (2–4)	5 (3–6)	0.000

Area under the curve (AUC) for SAPS II was 0.742 (95% confidence interval (CI): 0.67–0.80), for SOFA it was 0.720 (95% CI: 0.64–0.79) and for MEWS it was 0.718 (95% CI: 0.67–0.80). The lowest AUC was 0.62 (95% CI: 0.50–0.65) for APACHE II (Fig 1).

Fig 1. ROC curve of four different scoring system in patients admitted to IMCU.



Conclusion

In conclusion, our study found that SAPS II, followed by SOFA and MEWS scores, provided better discrimination in stratifying critical illness in patients admitted to the IMCU of a tertiary care hospital in Pakistan.

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Quality improvement for quicker prescriptions: reducing the time taken to issue biologics prescriptions in rheumatology

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Introduction

Biologic drugs are increasingly available for a wide range of diseases and are commonly prescribed by specialist teams in secondary care, resulting in an increasing demand upon already streched services. Delays in prescriptions create additional pressures across the multidisciplinary team and can cause patients distress and disatisfaction.

In our tertiary rheumatology department, an external homecare company audit from January to March 2021 identified an issue with late biologic prescriptions, with 'late' defined as more than 35 days after the initial request. An internal retrospective audit for May and June 2021 confirmed the problem, showing an average of 65 days from the initial prescription request date to the issue date. Only 5% of prescriptions were issued within 35 days. Our aim was for 90% of biologic prescriptions to be issued within 35 days by July 2022.

Methods

We engaged with key stakeholders (prescribers, the prescription administrative team and homecare pharmacists) to create a process map, starting with the initial prescription request and ending with the prescription being issued. Qualitative feedback was collated regarding the issues causing delays, following which we created a driver diagram to identify potential tests of change and guide our plan, do, study, act (PDSA) cycles (Fig 1).

Audit data showed that prescriptions spent between 0 and 5 days in pharmacy, therefore we focused on changes to the administrative and prescribing processes. The main outcome measure was the time taken for prescriptions to be issued in days. Process measures included the volume of prescriptions per month, the number of duplicate prescriptions and the duration of issued prescriptions. Balancing measures, such as impact on time taken to action results or assess referrals as a result of increased focus on prescriptions, were considered but could not be formally measured.

PDSA cycle 1 started in June 2021; electronic notes were added for issued prescriptions to reduce time spent completing duplicates. PDSA cycle 2 started in October 2021; prescription durations were lengthened to 8 months to reduce prescription volume. PDSA cycle 3 took place in December 2021; 10–20 non-urgent prescriptions were circulated to consultants weekly, with urgent prescriptions remaining the responsibility of the registrars.

Results and discussion

The run chart shows a median of 62 days for prescriptions to be issued from April 2021 to October 2021, with no apparent impact from PDSA cycle 1. Following PDSA cycles 2 and 3, the median reduced to 32 days by April 2022 with five consecutive dots below the initial median line, showing a clear trend (Fig 2). Additionally, 70% of prescriptions in January and February 2022 were issued within 35 days. Further data analysis could not take place as the data source became unreliable following sickness in the administrative team. However, all stakeholders report subjective improvements in their respective areas.

Conclusion

Using established quality improvement methodology has made a substantial impact on the time taken to issue biologics prescriptions within our department, benefiting our team, the homecare companies and our patients. The impact of increasing prescription duration has benefited other departments in our region and is being shared with other specialties within our trust.

Fig 1. Driver diagram.

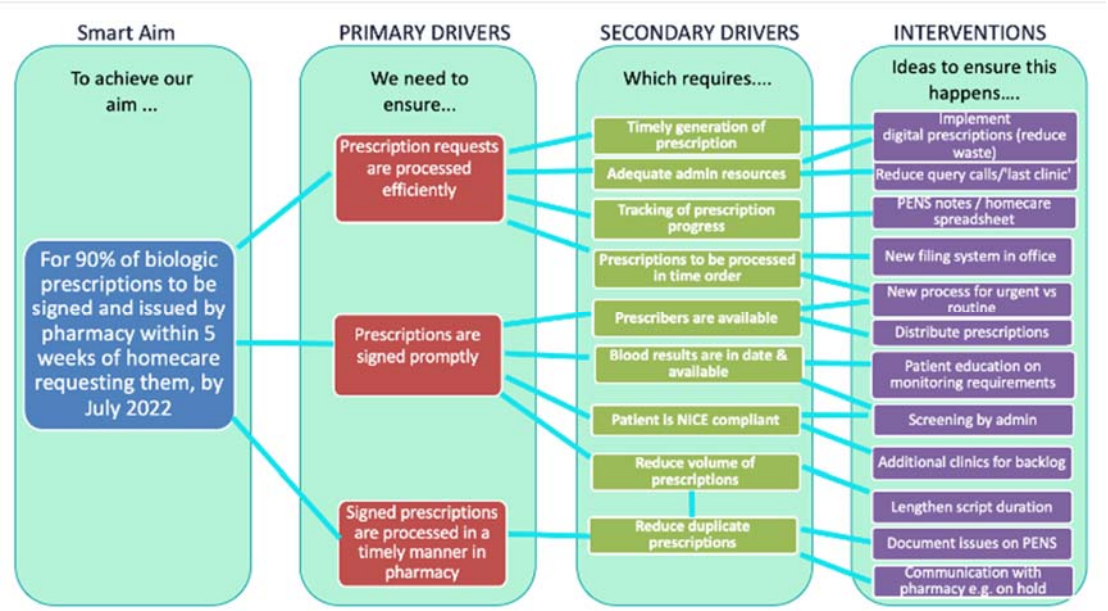
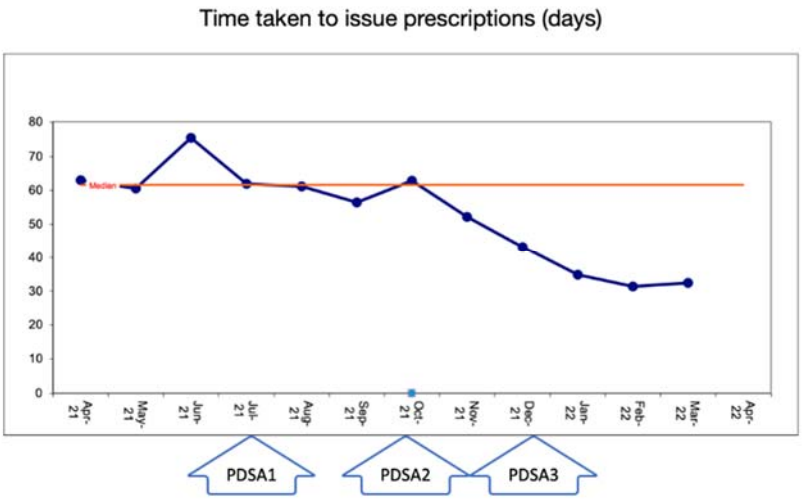

Smart Aim
To achieve our aim ...
For 90% of biologic prescriptions to be signed and issued by pharmacy within 5 weeks of homecare requesting them, by July 2022
PRIMARY DRIVERS
We need to ensure...
Prescription requests are processed efficiently
Prescriptions are signed promptly
Signed prescriptions are processed in a timely manner in pharmacy
SECONDARY DRIVERS
Which requires....
Timely generation of prescription
Adequate admin resources
Tracking of prescription progress
Prescriptions to be processed in time order
Prescribers are available
Blood results are in date & available
Patient is NICE compliant
Reduce volume of prescriptions
Reduce duplicate prescriptions
INTERVENTIONS
Ideas to ensure this happens....
Implement digital prescriptions (reduce waste)
Reduce query calls/'last clinic'
PENS notes / homecare spreadsheet
New filing system in office
New process for urgent vs routine
Distribute prescriptions
Patient education on monitoring requirements
Screening by admin
Additional clinics for backlog
Lengthen script duration
Document issues on PENS
Communication with pharmacy e.g. on hold

Fig 2. Time taken to issue prescriptions (days).



Opportunistic optimisation of inhaler technique in hospitalised adults with asthma: a two-phase quality improvement project

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Introduction

Asthma is a common chronic respiratory condition, responsible for approximately 1 in 250 deaths worldwide. Inhaled medications remain the mainstay of chronic stage treatment. However, disease control is rarely optimised in practice due to poor inhaler technique. We undertook a quality improvement project to opportunistically optimise inhaler technique in adults with asthma. We aimed to investigate effectiveness of two different educational methods to improve inhaler technique in patients diagnosed with asthma, hospitalised with a non-asthma-related diagnosis.

Materials and methods

We undertook a real-world, opportunistic quality improvement project. Inhaler technique in hospitalised patients, previously diagnosed with asthma, was assessed in two cohorts over two 12-week cycles using a standardised device-specific proforma of seven-step inhaler technique, classed: 'good' if six of seven steps were achieved; 'fair' if five of seven steps were compliant; and 'poor' for others. Baseline demographics and comorbidity data were collected in both cycles. Cycle 1 involved face-to-face education by a healthcare professional; cycle 2 involved additional use of an electronic device to show device-specific videos (asthma.org.uk). In both cycles, patients were reassessed within 2 days for improvements and the two methods were compared for effectiveness (Fig 1). Direct statements were taken from patients on their experience of the interventions.

Results

During cycle 1, 32/40 patients were reassessed within 48 hours; eight were lost to follow-up. During cycle 2, 38/40 patients were reassessed within 48 hours; two were lost to follow-up.

During cycle 1, two and 12 patients had good/fair baseline inhaler technique respectively, and 26 had poor technique. Most commonly missed steps were no expiry check / not rinsing mouth after steroid use. On reassessment, 17% of patients improved from poor to fair/good.

During cycle 2, initial assessment identified: 23 poor; 12 fair; five good. Post-videos, 35% of patients improved from poor to fair/good. The proportion of patients improving from poor to fair, or poor/fair to good increased in cycle 2 vs 1 (52.5% vs 33%).

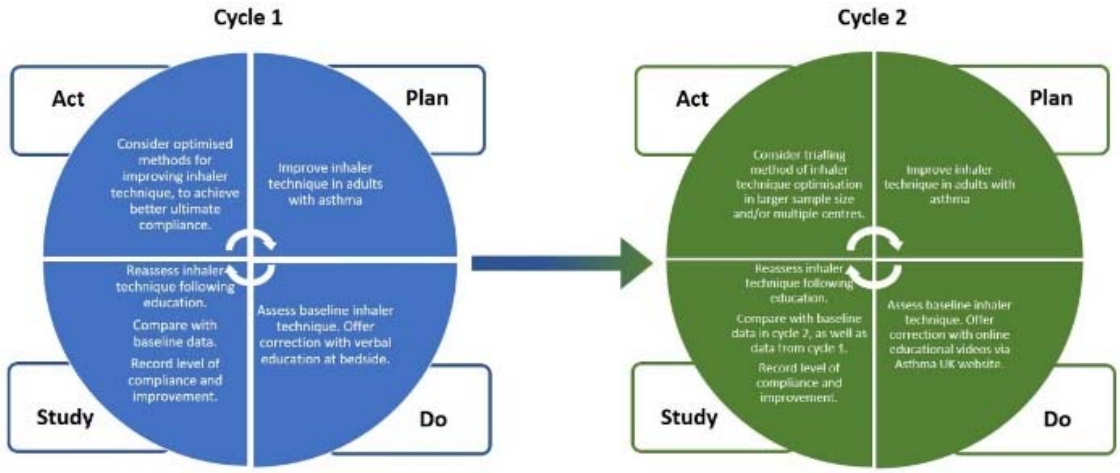
With regards to patient comments, there was a demonstrable preference for videos in cycle 2. Patients described them as 'helpful,' 'easy to understand,' 'informative'. Patients reported that they were able to learn specific steps of inhaler technique that they had previously missed, eg 'I sometimes wonder if the medicine is going in, but I will remember to tilt my head back and hold my breath after taking my inhaler.' Most patients agreed that an acute admission is a good opportunity to check inhaler technique, due to being quick and feasible if the patient is not too unwell and has capacity.

Conclusion

We have shown, in an opportunistically recruited cohort of patients admitted to hospital with non-asthma-related conditions, that there are deficiencies in inhaler technique among patients with asthma. We have demonstrated that visual instruction (with the use of specialised videos) is associated with improved inhaler technique compared with verbal instruction alone. Consideration of comorbidities and involvement of the multidisciplinary team, including carers and family members, is vital in ensuring optimised use of inhalers and subsequent good asthma control.

Opportunistic assessment and use of online videos are associated with optimised inhaler technique in patients with asthma, and this is a user-friendly and cost-effective approach to patient education.

Fig 1. Plan, do, study, act (PDSA) cycles.


Cycle 1
Act
Plan
Consider optimised methods for improving inhaler technique, to achieve better ultimate compliance.
Improve inhaler technique in adults with asthma
Reassess inhaler technique following education.
Compare with baseline data.
Record level of compliance and improvement.
Assess baseline inhaler technique. Offer correction with verbal education at bedside.
Study
Do
Cycle 2
Act
Plan
Consider trialling method of inhaler technique optimisation in larger sample size and/or multiple centres.
Improve inhaler technique in adults with asthma
Reassess inhaler technique following education.
Compare with baseline data in cycle 2, as well as data from cycle 1.
Record level of compliance and improvement.
Assess baseline inhaler technique. Offer correction with online educational videos via Asthma UK website.
Study
Do

Diagnostic tests and referral pathway of patients with diagnosis of heart failure in an acute admission unit

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Introduction

In England, about 80% of heart failure diagnoses are made in the hospital[1] and the overall survival rate is reduced approximately by half every 5 years after diagnosis.[2] Doctors of any level should be confident in detecting, diagnosing and initiating pharmacological treatments for patients with heart failure with reduced/mid-range ejection fraction (HFrEF/HFmrEF). Therefore, a two-cycle audit project has been performed to review the diagnostic and referral pathway for heart failure patients in James Cook University Hospital's acute admission unit (AAU).

Methods

This retrospective clinical audit project involved case note reviewing and computer search of 29 patients in April 2022 (pre-action plan) and 88 patients in November and December 2022 (post-action plan) who were suspected to have acute heart failure (AHF) and fulfilled the inclusion criteria (chest X-ray suggestive of heart failure or B-type natriuretic peptide (BNP) test >100 pg/mL).

Results

In April 2022, 29 patients with suspected AHF required echocardiogram for diagnostic purposes, but only 24/29 (83%) patients had the echocardiogram. Among the 24 patients, 15 patients had left ventricular ejection fraction (LVEF) <45% in their echocardiogram, but the specialist team reviewed only 14 /15 (93%) patients, and 13/15 (87%) patients were started on disease-modifying medications.

As a part of the action plan, remedial actions like simplifying the existing heart failure diagnostic pathway and introducing an AHF monitoring chart in AAU were implemented after the first audit.

Re-audit was done in November and December 2022, and an improvement was observed when 88 patients with suspected AHF required echocardiogram and 79 (90%) of them received it. With echocardiogram, 33 patients had LVEF <45% but the specialist team reviewed 31/33 (94%) patients, which improved slightly compared with the previous result. However, among the 33 patients with LVEF <45%, only 24/33 (73%) patients received their disease-modifying medications upon hospital discharge, and further intervention is necessary to improve on this aspect.

Table 1. Comparison of results from first and second cycles

Measure of quality	Standard[3]	Result: first cycle (Apr 2022)	Result: second cycle (Nov/Dec 2022)
Number of patients with suspected AHF who had echocardiogram on admission / within past 1 year	≥ 90% (National audit standard)	83% (24/29)	90% (79/88)
Number of patients with confirmed AHF (LVEF <45%) and received specialist care (cardiologist / HF specialist nurse)	≥ 80% (National audit standard)	93% (14/15)	94% (31/33)
All patients with HF and LVEF <45% prescribed with at least ACEI/ARB/ARNI and β-blocker, unless there is a contraindication	100%	87% (13/15)	73% (24/33)

Conclusion

Heart failure medications have indisputably proved to reduce mortality, prevent recurrent hospitalisations, and improve functional capacity in HFmrEF or HFrEF.[4] Thus, this group of patients needs to be identified and diagnosed with echocardiogram in order for them to receive specialist care and guideline-recommended therapy.

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Does moving patients to an appropriate frailty ward on the day of their assessment reduce length of stay?

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Introduction

In the unfortunate event that a frail patient is admitted to hospital, systems should be in place to reduce deconditioning and support prompt discharge. Over the past few years, local work has taken place to ensure that frail patients are identified early and reviewed by a specialist Frailty Liaison Team. A comprehensive geriatric assessment (CGA) takes place and, when appropriate, transfer to a frailty ward is recommended.

Previous local studies have shown that advised internal transfers are often delayed and may not even take place. In 2017, only 35% of frail patients were transferred to an appropriate ward.

Due to the specialist care provided by the frailty wards, it was felt that this was probably affecting patient length of stay. This study showed delays in moving identified frail patients to the appropriate ward, leading to an increase in length of hospital stay.

Method

Once a patient is identified as frail on the clinical decisions unit (CDU) or acute medical unit (AMU), the Frailty Liaison Team undertakes a CGA, and this identifies those patients who are appropriate for care on a frailty ward. A daily list of these patients is generated and forwarded to the site team.

Over a 10-month period, length of stay was compared between two groups: those who were transferred to a frailty ward on the day of assessment and those who were transferred more than 24 hours after assessment.

Results

Over 10 months, of those who underwent a CGA, 531 were identified as needing admission to a frailty ward. 28 patients were discharged from CDU or AMU.

377 (75%) of the patients were transferred to a frailty ward, and the remainder to other non-specialist areas. This is a considerable improvement compared with 2017.

71% were moved on the day of their CGA.

The data were trimmed to 30 days, removing patients with excessive lengths of stay.

The length of stay was 13.6 days for those transferred on the day of their CGA. For those who were transferred more than 24 hours after assessment, the length of stay was 14.8 days or 1.2 days longer. Estimating that a night in a hospital bed costs £250, this is a potential annual saving of £26,640.

11% died during their admission.

Conclusion

Frail patients transferred early to a specialist ward spend over a day less in hospital. This reduces direct costs and patients' exposure to hospital-related harm. These positive results have led to multidisciplinary

discussions around improving the local frailty pathway. These data will provide a platform with which to compare the discharge processes between the frailty and other wards and identify potential improvements in patient care.

We are also investigating whether there are long-term effects of an early review by the Frailty Liaison Team and whether this impacts on non-elective hospital attendances in the 6 months following their assessment.

Primary percutaneous coronary intervention (PPCI) transfer times: a quality improvement project of PPCI transfer times between Hinchingbrooke Hospital and Royal Papworth Hospital

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Background

Decisive treatment of ST-elevation myocardial infarction (STEMI) is through reperfusion strategies such as fibrinolysis or primary PCI where available. In centres with primary percutaneous coronary intervention (PPCI), trained paramedics are responsible for activating a PPCI call after confirming STEMI in the community. Occasionally, PPCI activation and transfer from district general hospitals (DGHs) may occur, where STEMI is diagnosed in patients who self-present to their local emergency departments (ED). One such DGH is Hinchingbrooke Hospital (HH), with its designated PPCI centre at the Royal Papworth Hospital (RPH). The survival benefit from PPCI is time sensitive, with increasing call to balloon time (CBT) chipping away at the survival advantage of PPCI over fibrinolysis.[1] Prospective data from the National Registry of Myocardial Infarction showed that the odds of in-hospital death with PPCI were equal to those of fibrinolysis when PPCI was delayed by a maximum of 114 minutes.[2] This evidence forms the basis of the CBT of 120 minutes adopted in the National Institute for Health and Care Excellence (NICE) guidelines.[3]

Aim

The aim was to retrospectively audit and improve the transfer times for the PPCI pathway between HH and RPH in line with NICE guideline 185 as well as the Myocardial Ischaemia National Audit Project (MINAP) standards.[3,4]

Materials and methods

Using the model for improvement approach, we initially audited the transfer times between HH and RPH against NICE guidelines and the MINAP standards and this demonstrated transfer times above the national standard. Subsequently, we intervened by developing an algorithm for the rapid diagnosis of STEMI and re-educated colleagues in the emergency department. Following the intervention, we re-audited the transfer time between HH and RPH to assess for any improvement.

Data related to all PPCI transfers from HH to RPH in both audit cycles were extracted from the nationally submitted British Cardiovascular Intervention Society Database, timings from the ambulance crew, and the TOMCAT angioplasty database at RPH. Specific outlier patient records were reviewed to identify standout factors that may have precipitated transfer delays. The outcome measures were time to diagnosis (time between arrival at HH and activation of PPCI pathway), CTB (time from when patient/DGH called and deployment of PCI) and DTB (time between presenting to Papworth Hospital and deployment of PCI option).

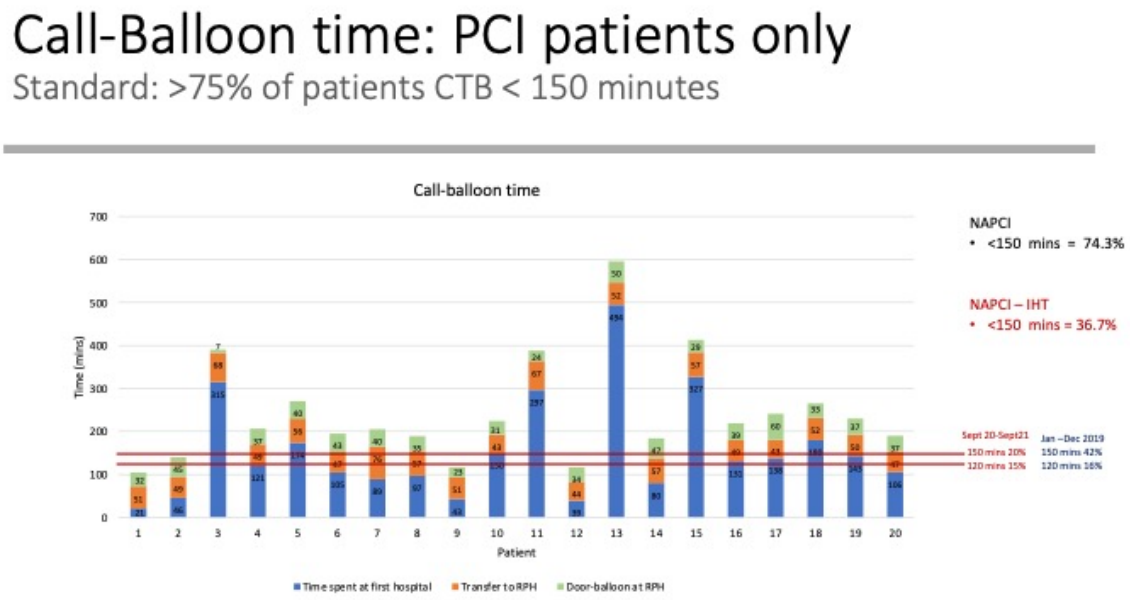
Results and discussion

Overall, there was a significant improvement in the DTB times in the second cycle compared to cycle 1. However, there was an increase in the CTB during the second cycle of the audit, due to a significant increase in the time to diagnosis (Fig 1). This was mainly due to the impact of COVID-19 on emergency department assessment times, leading to delays in confirming patients' eligibility for transfer.

Conclusion

Adherence to the established protocol and reduced COVID-19-related pressures will ensure reduced CTB, translating to improved outcomes for patients with STEMI requiring transfer from HH to RPH for PPCI.

Fig 1. Graph showing the CTB times for first and second audit cycles compared with the national standard.



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Appropriateness in management of pulmonary embolism

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Introduction

Pulmonary embolism (PE) is a treatable and common medical condition. Depending on severity, it can be managed as an outpatient or require admission to a ward, high-dependency unit (HDU) or intensive care. Severity can be assessed by using the 'Pulmonary Embolism Severity Index' (PESI) or Simplified Pulmonary Embolism Severity Index' (sPESI) tools. The score helps to determine the right clinical setting for managing that particular patient with PE. The European Society of Cardiology (ESC) guideline also suggests that cardiac markers (troponin or proBNP) are measured if there is evidence of right ventricular strain on CT/echo or clinical signs of PE severity (sPESI ≥1). The current National Institute for Health and Care Excellence (NICE) guidelines do not recommend further investigations for cancer in patients with unprovoked PE unless they have relevant clinical symptoms or signs. Therefore, once the PE has been diagnosed, a proper system review and thorough physical examination, including lymph node, breast and testicular examination, should be offered for patients with unprovoked PE. Blood tests including FBC, U&E, Cr, LFT, bone profiles, PT and APTT should be taken.

Objectives

- To assess compliance with PE guidelines.
- To establish the right clinical setting for managing PE.

Method

40 patients' notes were studied retrospectively. Patients with haemodynamic instability requiring thrombolysis (massive PE) and those with metastatic malignancy receiving palliative care were excluded.

Results

Median age was 66 years, with a range of 26–88 years. There were equal proportions of men and women. Only one patient was post-partum.

10 patients were found to have low risk (sPESI =0) whereas 30 patients had high risk (sPESI ≥1). PESI/sPESI scoring was calculated only in 2.5%. 57% of patients were managed on the ward, 35% as outpatients and 7.5% in cardiac monitor beds. On our retrospective analysis, based on PESI score, only 65% were managed in the right setting (Fig 1). Among those who were not managed in an appropriate place, nine patients were discharged and treated as outpatients when they needed admission. Four patients were admitted to the ward without cardiac monitor or referring to HDU while they required telemetry or HDU due to right ventricular strain, and one patient was unnecessarily admitted.

Evidence of right ventricular strain on CT or echocardiogram was found in 22.5%. Among these patients, troponin was checked in 34.4% and proBNP in 25%.

25 patients were found to have provoked PE while 15 were unprovoked. Among cases of unprovoked PE, family history of VTE was enquired in 33.3%, thorough system enquiry in 40% and a full physical examination in 26.7% (Fig 2).

FBC, renal and liver function were checked in all patients. Bone profile was checked in 80%, PT in 87.5% and APTT in 80%.

Recommendation

This audit has identified some areas for further improvement in management of PE. To achieve the standardised care, it is recommended to promote the awareness of current guidelines by doing presentation of audit results, teaching sessions to clinicians and re-auditing to see the improvement after interventions.

Fig 1. Management in correct setting.

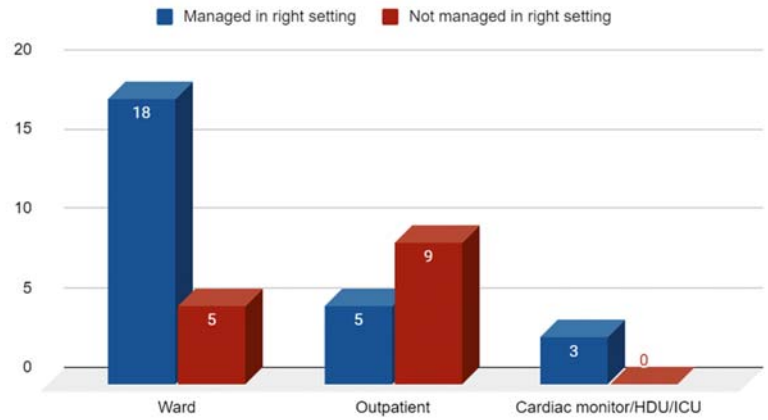
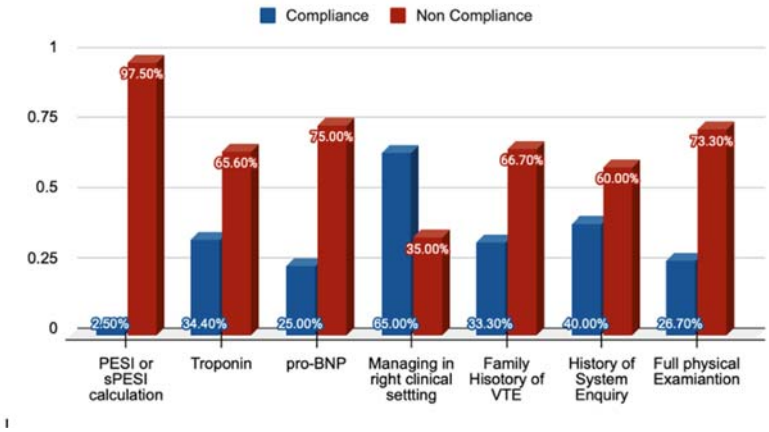


Fig 2. Data analysis.



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Prospective interviews to understand patient attitudes towards digitalisation of clinic in medical ophthalmology: a quality improvement project

Authors: Christos Papaioannou,[A] Laura Maubon[A] and Ben Kirkpatrick[A]

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Introduction

Artificial intelligence (AI) is a new focus that has drastically changed the field of medicine and surgery in order to improve time and cost efficiency while allowing for high-quality care of patients. Moorfields has collaborated with Google Health and DeepMind to create AI algorithms that can diagnose patients with retinal diseases such as age-related macular degeneration and diabetic retinopathy accurately and quickly through the analysis of optical coherence tomography scans and fundus photographs.[1,2] This can prevent unnecessary delays to treatment and better distribution of NHS resources by flagging up patients who need to be seen urgently by an ophthalmologist.[3,4] Although the full utilisation of AI on a wider scale will be achieved in a couple of years' time, it is vital to be aware of the patients' perspectives on this topic.

The aim of this quality improvement project is to assess whether patients are aware of what AI entails and consequently assess their trust and acceptability of this.

Methods

We prospectively surveyed 30 patients who are under the care of the Medical Retina clinic at Moorfields Eye Hospital between December 2022 and January 2023. Patients were asked a total of ten questions. Questions were designed to assess their demographics, their previous knowledge of AI, their trust towards AI if it was to be implemented in the future and what would make them more confident in AI and improve their overall patient experience.

Results

From the cohort, 83.7% of the patients were between 50 and 79 years old, 60% were female and 40% were male. The commonest ethnicity was White, accounting for 50% of the cohort, followed by Black or Black British with 20% of the cohort, and Asian or Asian British with 16.7% of the cohort.

When they were asked how confidently they understood the term 'artificial intelligence', 53.3% responded 'not at all confident' or 'not so confident'; nevertheless, the most common answer to how likely they would be to trust AI in their pathway to treatment was 'very likely', accounting for 26.7% of the cohort.

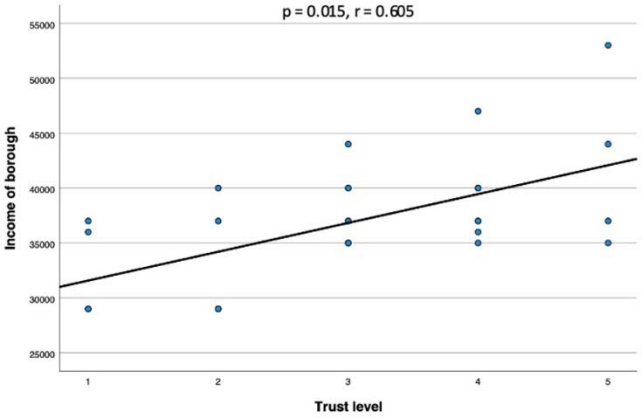
A statistically significant correlation between the median income of the patient's borough against the level of trust towards AI has been established ($p=0.015$; $r=0.605$) (Fig 1). This highlights that patients from deprived socioeconomic backgrounds were less likely to trust AI for their treatment.

When asked what would improve their patient experience if AI was to be implemented, more than 80% of the patients responded by saying an explanation of what AI is should be distributed prior to their appointment via a leaflet and/or a video (Fig 2).

Conclusion

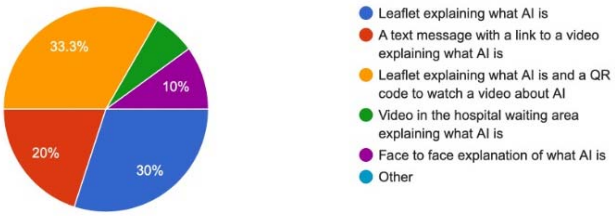
Most patients are not at all confident about what AI is; however, most patients would trust AI in their treatment pathway. Patients need to be educated about what AI is in order to trust it and this could be accomplished via a leaflet and/or a video version of an explanation regarding what AI entails.

Fig 1. Correlation between the median income of the patient's borough against the level of trust towards AI.



Key: 1 – Not at all likely; 2 – Not so likely; 3 – Somewhat likely; 4 – Very likely; 5 – Extremely likely

Fig 2. If in the future some tasks of the doctors are taken over by machines, what would like to have in order to improve your patient experience? (30 responses).


33.3%
10%
20%
30%
Leaflet explaining what AI is
A text message with a link to a video explaining what AI is
Leaflet explaining what AI is and a QR code to watch a video about AI
Video in the hospital waiting area explaining what AI is
Face to face explanation of what AI is
Other

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Audit on trauma theatre 'golden patient' system designed to increase efficiency by reducing waiting time

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Introduction

The 'golden patient' system is a joint initiative between the Orthopaedic and Anaesthetic departments of Peterborough City Hospital to improve theatre efficiency by reducing delays caused by logistics that need to be done to make the first patient on the list ready for trauma theatre at 8am. This was a project that had been trialled before, yet there was no formal outcome or reason identified as to why it was stopped. Poor planning and scheduling process is known to be the most important factor in the delay of start times in surgery.[1]

Materials and methods

A questionnaire consisting of two parts was disseminated in trauma theatre for 14 consecutive days in July 2020. Part A was to be filled by the anaesthetic trainee covering the night on-call shift in emergency theatre, and part B was to be filled by the day trauma theatre anaesthetist consultant or operating department practitioner (ODP).

The standards we were auditing against were:

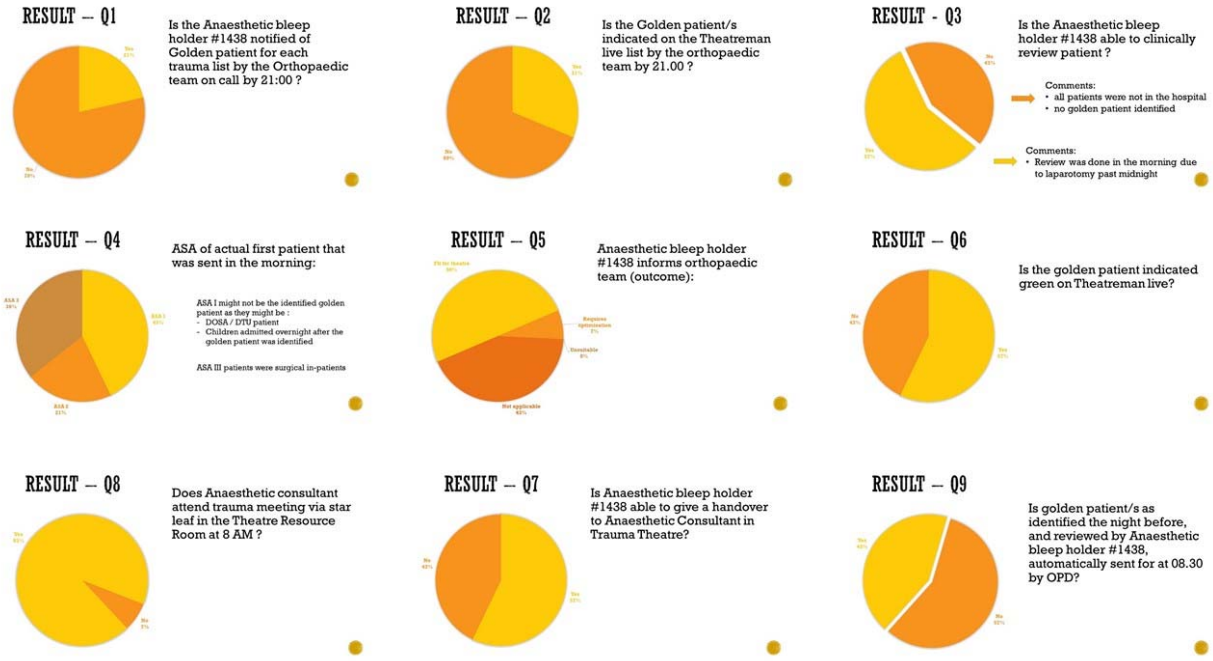
- Orthopaedic consultant on call determines running order for the trauma list(s) the evening before – confirm at junior handover 20:00
- Ortho junior on call at night prepares Theatreman lists, with free text indicating order of patients for each trauma list
- 'Golden patient' identified as first patient on each trauma list, with allocated surgeon, and labelled as such on Theatreman
- Junior anaesthetist on call (bleep 1438) will review golden patient(s) on the night before the trauma list to ensure medical optimisation/anaesthetic concerns
- Junior orthopaedic doctor to inform on-call consultant of any urgent case admitted overnight that may necessitate order change (ideally by 07:45)
- Trauma meeting 08:00
- Automatic send by ODP at 08:30 for golden patient, unless requested to postpone by anaesthetist/surgeon/lead scrub (as agreed by theatre management team)

Results and discussion

Results are shown in Fig 1. The anaesthetic team was notified about the 'golden patient' before 9pm 21% of the time, but the 'golden patient' was indicated in the Theatreman list before 9pm 31% of the time. The anaesthetic SHO covering emergency theatre was able to review the 'golden patient' 57% of the time; reasons cited for this not happening were business in emergency theatre, or the 'golden patient' identified was coming as a day case (not in the hospital). Regarding the ASA (American Society of Anesthesiologists) status of the actual first patient of trauma theatre: ASA 1 43%, ASA 2 21%, ASA 3 36%. Around 50% of patients who were reviewed by the anaesthetic team were fit for surgery, but only 57% were indicated green on the Theatreman list. Handover to the anaesthetic consultant was done 57% of the time. The anaesthetic consultant attended the trauma meeting in the morning 93% of the time. Automatic patient sending by ODP happened 43% of the time.

Recommendations are to improve decision making on patient selection and communication from the orthopaedic team, to exclude paediatric cases and day cases, and to have a trainee alongside the anaesthetic consultant for the trauma list.

Fig 1. Responses to questions regarding communication, documentation, clinical review, patient suitability, handover, trauma meeting attendance, and the golden patient's sending time.


RESULT – Q1
Is the Anaesthetic bleep holder #1438 notified of Golden patient for each trauma list by the Orthopaedic team on call by 21:00 ?
RESULT – Q2
Is the Golden patient/s indicated on the Theatreman live list by the orthopaedic team by 21.00 ?
RESULT - Q3
Is the Anaesthetic bleep holder #1438 able to clinically review patient ?
Comments:
• all patients were not in the hospital
• no golden patient identified
Comments:
• Review was done in the morning due to laparotomy past midnight
RESULT – Q4
ASA of actual first patient that was sent in the morning:
ASA I might not be the identified golden patient as they might be :
- DOSA / DTU patient
- Children admitted overnight after the golden patient was identified
ASA III patients were surgical in-patients
RESULT – Q5
Anaesthetic bleep holder #1438 informs orthopaedic team (outcome):
RESULT – Q6
Is the golden patient indicated green on Theatreman live?
RESULT – Q8
Does Anaesthetic consultant attend trauma meeting via star leaf in the Theatre Resource Room at 8 AM ?
RESULT – Q7
Is Anaesthetic bleep holder #1438 able to give a handover to Anaesthetic Consultant in Trauma Theatre?
RESULT – Q9
Is golden patient/s as identified the night before, and reviewed by Anaesthetic bleep holder #1438, automatically sent for at 08.30 by OPD?

Conclusion

The 'golden patient' system does not result in automatic patient sending, due to communication factors, patient selection, and staffing/workload factors.

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Improving the efficiency of catheterisation and reducing delays to patient care in a district general hospital

Authors: Claire Crewe[A] and Ashraf Abdelaziz[A]

[A]North Cumbria Integrated Care Foundation Trust, UK

Introduction

Catheterisation is a common procedure required for the monitoring of acutely unwell patients. Most emergency departments have equipment trolleys for a number of procedural skills including catheterisation; however other departments, including the acute medical unit, do not follow suit despite the acuity of some patients' conditions. Without accurate monitoring, the severity of a patient's condition or their deterioration may not be recognised or appreciated as early as it could possible.

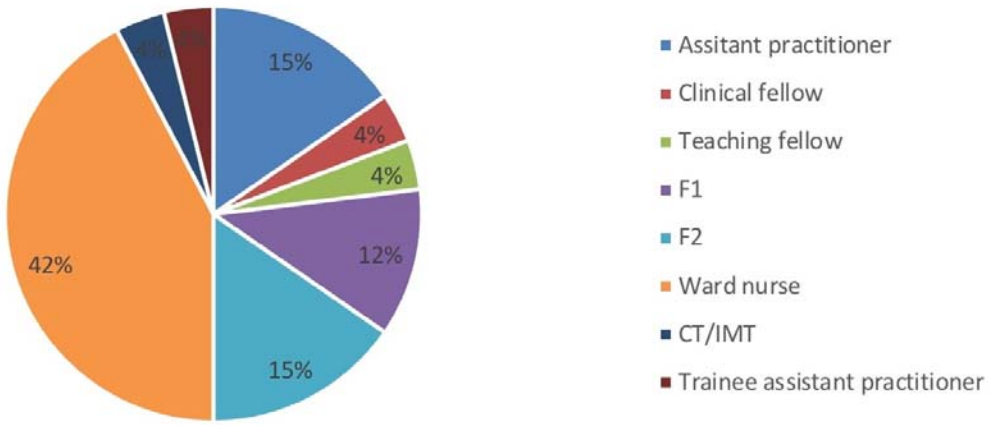
Methods

This complete cycle project started with an initial questionnaire sent out to all clinical staff working on the acute medical unit to gauge the scale of the problem. This resulted in the introduction of a catheter equipment trolley to the acute medical unit, which included all the required equipment, documentation and a restocking list. A second questionnaire was then sent out following a number of months of use to assess the impact of the catheterisation trolley.

Results

There were 26 respondents to the initial questionnaire spanning various roles within the multidisciplinary team. The initial questionnaire found that 92% of staff members (both rotational and permanent staff) found the process of locating catheterisation equipment time-consuming and 64% felt that patient care was being directly impacted upon and delayed due to the difficulties in locating the equipment.

Fig 1. Role of those completing the questionnaire.



Following the introduction of the catheterisation trolley, a repeat questionnaire found that 85% of respondents felt that this positively impacted upon the time to catheterisation and reduced delays to patient care.

Conclusions

Overall, the equipment trolley is a successful addition to the ward. As a relatively simple measure, these positive findings give scope for this to be expanded to further departments and procedures.

Improving access to ultrasound-guided large volume abdominal paracentesis in a district general hospital

Authors: Kimberley Butler,[A] Holly Harrison-Reid[A] and Richard Keld[A]

[A]Royal Albert Edward Infirmary, Wigan, UK

Introduction

The 2020 British Society of Gastroenterologists (BSG) guidelines on the management of ascites in cirrhosis recommend that ultrasound (US) guidance should be considered during large volume paracentesis (LVP) to reduce the risk of adverse events.[1,2] It is also suggested in the BSG safety toolkit where two landmark-based attempts have failed.[3] At our hospital, we noticed a delay in US-guided LVP compared with LVP using the landmark technique. We aimed to improve the time between decision for LVP to the procedure being undertaken (TLVP) using quality improvement (QI) methodology.

Materials and methods

We retrospectively analysed LVP procedures over a 19-month period ending August 2020 (n=89) and divided these into US vs landmark technique. We demonstrated a delay in TLVP in the US group. We then set out to improve TLVP using plan, do, study, act (PDSA) cycles. Our primary driver was lack of availability of US, and so we sought to improve access to US via a same-day 'hot slot' agreement with our radiology department. Following this, a ward-based US was procured for the gastroenterology ward. We measured the TLVP after each intervention and charted the results over time.

Results and discussion

Prior to our intervention, the average TLVP was 2 days in patients requiring US-guided LVP and 1 day in the landmark group. Following our second intervention, TVLP in patients requiring US-guided LVP was 1 day in both groups.

The primary limitation of the QI project was small sample size. A possible reason for this was the short data collection period following each intervention. We also noted that a lot of LVP procedures were performed in the Planned Intervention Unit (PIU) rather than as an inpatient procedure and therefore were not included in our sample. There may well have been a shift towards outpatient LVP, given that the data collection period took place during the emergence of the COVID-19 pandemic. We also noted that the PDSA cycles overlapped with junior doctor changeover. The is a potential confounding factor, as clinicians who gained experience in US-guided LVP moved to other departments, leading to month-to-month fluctuations in the frequency of US use.

Conclusion

We implemented a successful change intervention to improve access to US-guided LVP. We hope that this improvement will be sustained by ongoing PDSA cycles. Future directions for the project include improving training in the use of US to safely mark ascites, as currently there is no formal training or accreditation process in our hospital. In subsequent cycles, we would like to demonstrate not only an improvement in TVLP, but also an improvement in overall length of stay and improved patient experience.

Fig 1. Poster advertising the 'hot slot' system for departmental ultrasound.

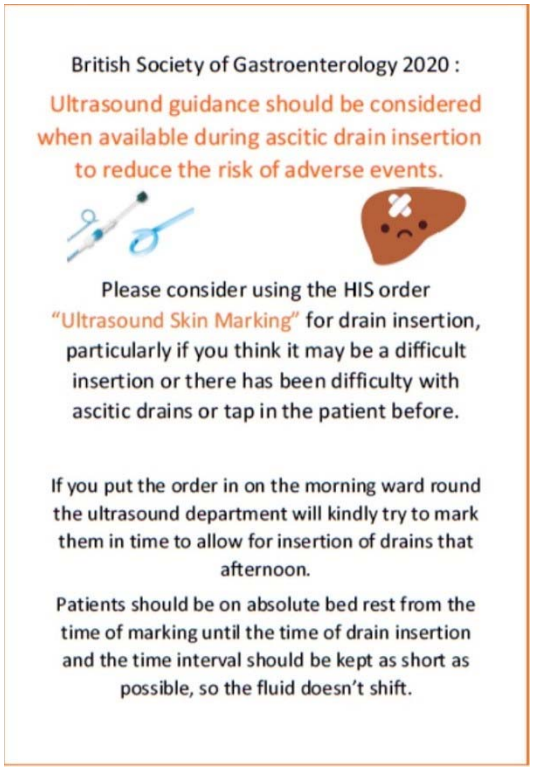
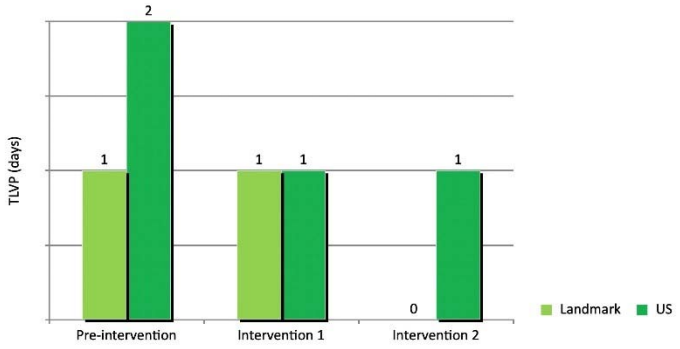

British Society of Gastroenterology 2020 :
Ultrasound guidance should be considered when available during ascitic drain insertion to reduce the risk of adverse events.
Please consider using the HIS order "Ultrasound Skin Marking" for drain insertion, particularly if you think it may be a difficult insertion or there has been difficulty with ascitic drains or tap in the patient before.
If you put the order in on the morning ward round the ultrasound department will kindly try to mark them in time to allow for insertion of drains that afternoon.
Patients should be on absolute bed rest from the time of marking until the time of drain insertion and the time interval should be kept as short as possible, so the fluid doesn't shift.

Fig 2. Time between decision for LVP to the procedure being undertaken (TLVP) across the three stages of the project.



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Audit on delayed discharges for medically fit for discharge patients

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Introduction

NHS England is under extreme pressure these days due to clinical workload and non-availability of hospital beds. Patients who are medically fit for discharge (MFFD) continue to stay as inpatients in wards due to various reasons. This not only incurs extra cost to the hospital in terms of nursing cost, medications, medical equipment etc, but is also associated with a higher chance of nosocomial infections.[1] These hospital resources could be better allocated to acutely unwell patients who need extra medical attention.

We conducted an audit to look at the average duration of delay between a patient declared MFFD and the actual time that the patient left the ward to their next destination (own home, community hospitals for further period of rehabilitation, residential care home / 24-hour nursing home) and further dissected the causes of delay for MFFD patients leaving the ward.

Materials and methods

A comprehensive retrospective review of inpatient medical notes was conducted for 70 patients admitted to our medical ward during a period of 2 weeks in 2021. We looked at the date and time that the patient was documented as MFFD during medical ward rounds and when they actually left the ward. Their discharge destination was also noted. Patients who died, self-discharged against medical advice, absconded or transferred to other specialty wards during the study period were excluded. Delayed discharge was defined as those patients who stayed in the medical ward after 24 hours of being documented as MFFD.

Results and discussion

Out of the 70 patients studied, 15 (21%) were excluded from the data analysis due to incomplete documentation. Another 15 patients were excluded from the study according to exclusion criteria. Out of the remaining 40 patients, there was no delay in discharges for 32 (80%) patients. Out of these, 65% of patients were discharged home and 15% to community hospitals. Among the remaining eight patients who had delayed discharge, four (50%) patients were discharged home and the remaining four (50%) were sent to a community hospital for a period of rehabilitation. Various reasons were found for their delay in discharge. These included awaiting bed in a community hospital, family not able to cope at home, awaiting for multidisciplinary team meeting outcome from another specialty, and waiting for warfarin education from pharmacy. There was no significant difference in the delays in the discharge in terms of patient's age or gender.

Conclusion

Our study showed that the hypothesis of delayed discharge due to lack of community beds or patients awaiting a social package of care is not as common as it was thought to be. Discharge destination also does not predict the delay in the hospital discharge process. Age/gender is equally not a significant predictor, as this audit included patients from wide variety of age groups. To further support this, a larger cohort of patients and longer duration of study is needed in different medical wards.

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Safety and efficacy of apixaban dosage for stroke prevention in atrial fibrillation with acute kidney injury populations in a tertiary care hospital

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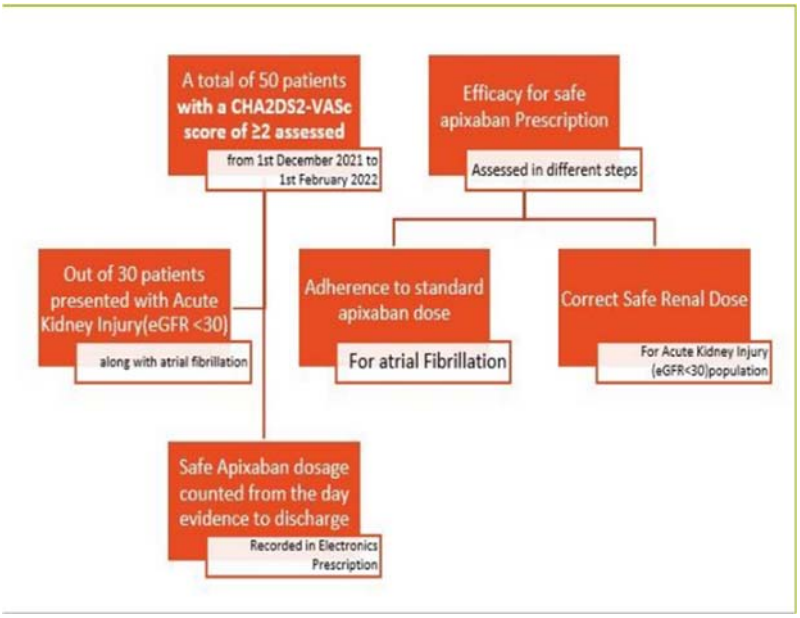
Introduction

There are no established European Society of Cardiology guidelines for safe dosage of apixaban for stroke prevention in atrial fibrillation (AF) in the population with acute kidney injury (eGFR <30). A lack of acceptable safe correct dosage of apixaban in this population can lead to potentially serious or life-threatening implications such as acute metabolic acidosis and long-term renal replacement therapy for worsening kidney function.[1]

Materials and methods

This study was conducted to investigate the safe and efficient apixaban dose that is indicated in the World Health Organization guidelines. Further objectives were to formulate local guidelines to standardise apixaban prescription.[2] A total of 50 patients with a CHA_2DS_2-VASc score of ≥2 were assessed for safe apixaban dose from 1 December 2021 to 1 February 2022. Out of these, 30 presented with acute kidney injury (AKI) (study population). Apixaban dose was counted from the day it was initiated until discharge, and recorded in electronic prescription. Efficacy for safe prescription was assessed in different steps as adherence to standard apixaban dose for AF and correct renal dose for AKI. An acceptable audit standard was devised as 100% adherence to a safe renal dose (2.5 mg BD) of apixaban for all patients experiencing AF with AKI.

Fig 1. Methods flowchart QI tools.

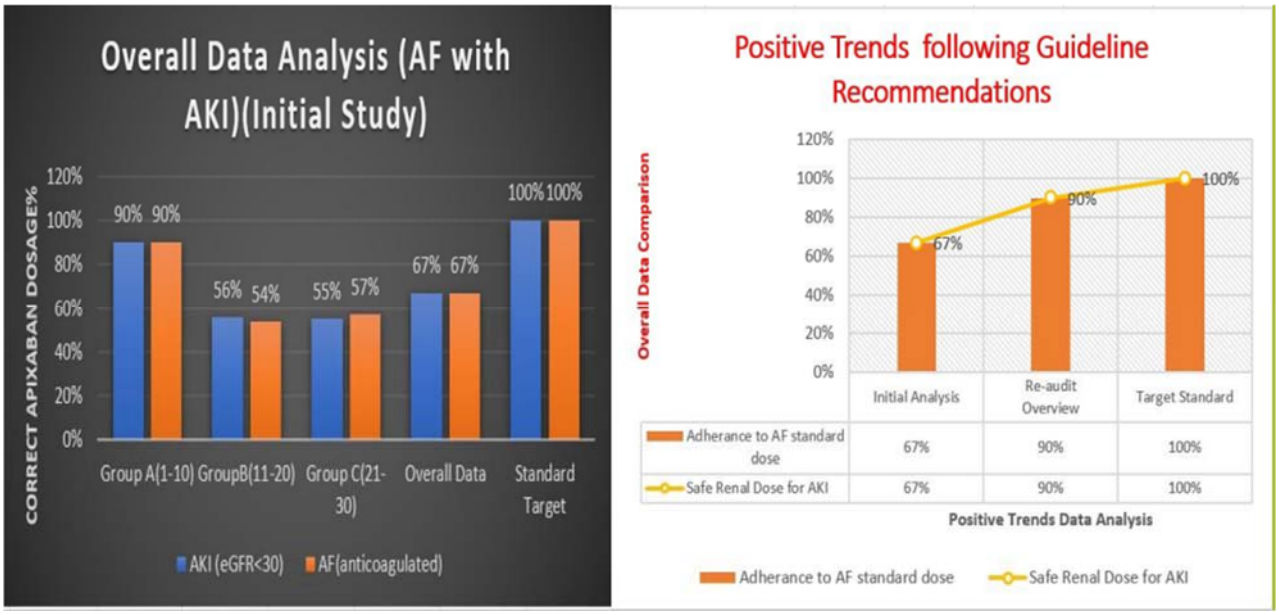

A total of 50 patients with a CHA2DS2-VASc score of ≥2 assessed
from 1st December 2021 to 1st February 2022
Efficacy for safe apixaban Prescription
Assessed in different steps
Out of 30 patients presented with Acute Kidney Injury(eGFR <30)
along with atrial fibrillation
Adherence to standard apixaban dose
For atrial Fibrillation
Correct Safe Renal Dose
For Acute Kidney Injury (eGFR<30)population
Safe Apixaban dosage counted from the day evidence to discharge
Recorded in Electronics Prescription

Results and discussion

It was found that only 20 out of 30 patients (67%) achieved a safe renal dose of apixaban. In 10 of the 30 patients who did not meet the audit standard, the main reasons were lack of education about safe apixaban dose in AKI and standard guidelines. A standardised safe renal dose was hence devised to improve the efficacy of apixaban for stroke prevention. This involved designating the on-call cardiology registrar to flag up the importance of a safe apixaban dose in the AKI population. A multiprofessional team discussion

was held about poor adherence to safe apixaban prescription, with ongoing analysis following guideline recommendation. Reanalysis from 15 February to 3 March 2022 revealed an improvement from 67% to 90% adherence to the safe renal dose of apixaban in populations with AKI and AF following implementation of guideline recommendation. An annual clinical governance meeting has been planned for ongoing reanalysis for adherence to guideline and safe apixaban prescription for the AKI and AF population in long-term stroke risk prevention.

Fig 2. Overall data analysis and positive trends data comparison following recommendation.



Conclusion

The incorporation of audit recommendation in local cardiology guidelines has led to significant improvement in patient quality of care and safety prescription for stroke prevention in AF with AKI population.[2] Overall, this study highlights a future focus on guideline-recommended apixaban dosage adjustments in the AKI population who require anti-coagulation therapy for future stroke prevention.

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Datix reporting in University Hospitals of North Midlands: what can trainees learn from this?

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Introduction

Datix is a web-based incident reporting and risk management software used in many hospitals in the UK to report incidents. The purpose of reporting an incident is to alert the healthcare system to risks and to provide guidance on preventing potential incidents that may lead to avoidable harm or death.[1] Datix can be used to report any adverse incident that has the potential to produce unexpected or unwanted effects, or any incident which has a consequence or a learning point. An event that causes a loss, injury or a near miss to a patient, staff or others.[2]

Materials and methods

- The primary objective was to analyse the common themes and modifiable risk factors within Datix reporting in University Hospitals of North Midlands NHS Trust and determine whether there are more effective ways for trainees to learn from their errors.
- The secondary objective was to gather managerial responses to these Datix incident reports ('datixes') in order to gain a perspective on how the trust is working to resolve some of these common complaints.
- All datixes were from the acute medical unit and emergency departments at County Hospital, Stafford received by one consultant.
- 93 datixes were selected in total, of which 22 were duplicates and 15 could not be viewed due to problems with access. These have been deleted from the dataset analysis and hence a total of 56 reports were analysed.
- We tabulated each datix in Microsoft Excel (2010), identified what the incident was, identified the nature of the incident, harm caused (if any) and how the incident was resolved.

Results and discussion

- In the majority of cases no harm was caused, as the incident was flagged before any adverse consequences of the incident could take place. The two drugs that were commonly incorrectly prescribed were insulin and low-molecular-weight heparin.
- Datix is an inefficient process and it takes much-needed resources to review these cases, which often do not amount to significant change in practice when it could be used as a training opportunity for junior doctors (in the form of reflection) who are often at the receiving end of these datix incidents.
- Managerial responses to these errors were seldom required, as most of the time the error had been corrected prior to the datix being completed, resulting in no patient harm.
- Electronic prescribing was often cited as a way of reducing the number of incidents of duplicate prescribing.
- The biggest reason for an incident being filed was prescribing errors, often due to lack of knowledge regarding the medication, for example with insulin treatment pathways. Secondly, the emergency department prescription chart not being integrated with the medical team's prescription chart.

Fig 1. Reasons for datix.

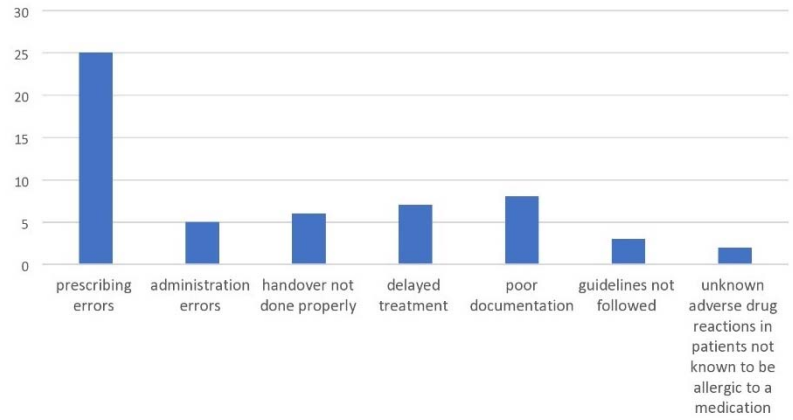

Table 1. Managerial responses to datix

Managerial responses	Frequency
No action	46
Reflection	2
Disciplinary action	0
No response	8

Conclusion

Reflection could be more beneficial for the trainee from an educational point of view as well as from a development perspective, as it addresses the error made and the reflection helps the individual learn from the incident.[3] Also, ultimately there is good evidence to suggest that electronic prescribing can help to cut down a significant proportion of these basic errors.[4]

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A quality improvement project for the ECG interpretation skills of junior doctors in West Suffolk Hospital

Authors: Amr Elkammash,[A] Naeem Ubaid,[B] Adel Khalifa,[C] Emad Raouf[C] and Liam Ring[C]

[A]Cambridge University Hospitals, Cambridge, UK; [B]Chelsea and Westminster Hospital NHS Foundation Trust, London, UK; [C]West Suffolk NHS Foundation Trust, Bury St Edmunds, UK

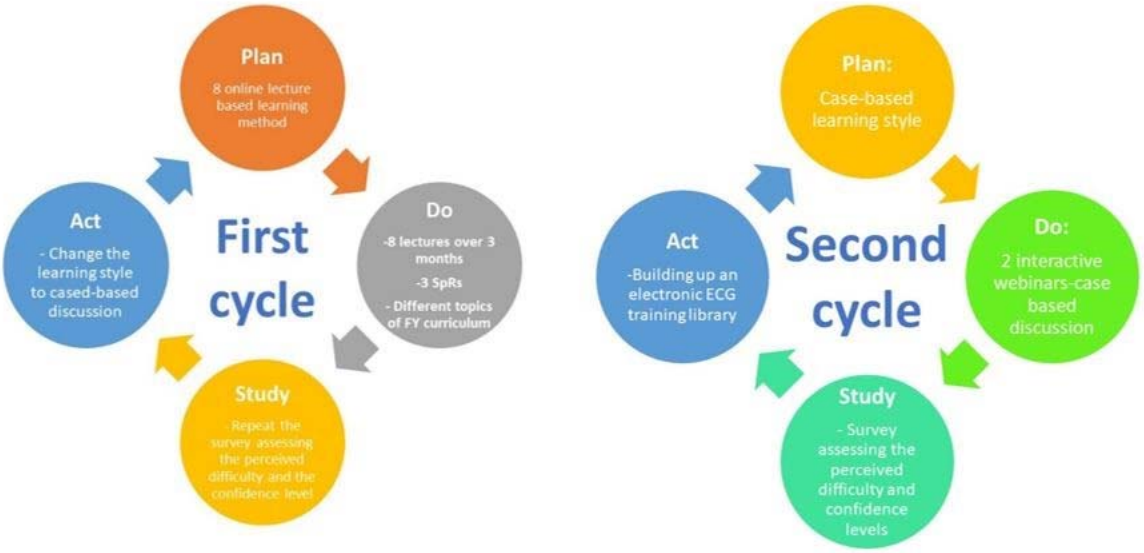
Introduction

As a result of the changing volume and breadth of their clinical experience due to the COVID pandemic, younger medical professionals and their education were substantially influenced.[1] We audited the impact of the COVID pandemic on the electrocardiogram (ECG) interpretation skills of junior doctors (foundation doctors and senior house officers) in West Suffolk Hospital (WSH), followed by a quality improvement project (QIP) on the education quality using two plan, do, study, act (PDSA) cycles.

Methods

We invited 150 junior doctors to rate the difficulty they face in reading ECGs and their confidence in reading ECGs independently on Likert scales from 1–10. Subsequently, we designed a quality improvement project of two PDSA cycles using an online learning method. In the first PDSA cycle, we followed the lecture-based learning approach (eight lectures). In the second PDSA cycle, we followed the case-based learning approach (two interactive webinars) (Fig 1).

Fig 1. A central illustration summarising the two PDSA cycles of the QIP.



Results and discussion

65 doctors accepted the invitation to the audit. 100% of the participants felt a substantial difficulty in interpreting ECGs (scoring 6 or more). 76.5% of the participants did not feel enough confidence to read ECGs independently (scoring 6 or less), with 34.3% lacking that confidence (scoring 4 or less). The first PDSA cycle managed to raise the confidence score in 90% of the attendants (the mean amount of improvement was 2 points on the Likert scale), with 70% scoring 6 or more on the scale. The difficulty they face reading ECGs was reduced in 100% of participants (the mean amount of improvement was 3 points on the Likert scale), with only 40% scoring 6 or more on the scale. 100% of the attendants felt that the course has helped in the improvement of care they provide to their patients. In the second PDSA cycle, the amount of improvement gained by case-based learning did not differ significantly from lecture-based learning (Fig 2).

Our findings agree with the results of the systematic review by McCutcheon *et al*,[2] showing the non-inferiority of virtual learning in teaching clinical skills compared with face-to-face learning. It also confirms the findings of Kantar *et al*[3] of the equivalence of lecture-based and case-based learning in knowledge retention by learners.

Fig 2. Cumulative results of the two PDSA cycles.

Conclusion

The COVID pandemic has significantly compromised the ECG interpretation skills of junior doctors starting their careers. Both lecture-based and case-based online learning are effective methods of medical education that can improve the quality of cardiology training and patient care.

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Assessing critical medication prescribing in the acute assessment unit: second cycle

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Introduction

Critical medications[1] can be described as priority medications that must be received at or close to the prescribed time. The National Institute for Health and Care Excellence (NICE) states that medicine-related patient safety incidents are more likely when medication reconciliation occurs over 24 hours after acute admission.[2] This second audit cycle focuses on prescription of critical medications within 24 hours from admission to the acute assessment unit (AAU).

Materials and methods

85 patients' prescription charts were checked against their GP records via Viper over a 2-month period to determine whether all critical medications had been prescribed by doctors within 24 hours of admission to AAU. Compliance target was 100%, as per the first audit cycle (June 2021).

Results and discussion

Our data show that 63 patients (74.1%) had critical medications prescribed by a doctor within 24 hours of admission, while 22 (25.9%) did not. Of these, 13 (59.1%) had their medications prescribed by pharmacy staff, while nine (40.9%) did not within the target time. Although there was an improvement in the timely prescription of critical medications by doctors, intervention by pharmacy staff was significantly decreased. This could possibly be due to the lack of intervention in the pharmacy after the first audit cycle, as posters were mainly put up in medical areas within AAU and A&E. As a result, overall compliance was 89.4%, showing a decrease of 5.4% (Fig 1). Furthermore, the main three critical medications not prescribed within 24 hours of admission in the second audit cycle were opiates, steroids and insulin, all of which are incredibly important medications to be given on time. Although timely prescription of opiates was reduced compared with the first cycle (21.4% cycle 1; 25.7% cycle 2), there was an increase in the timely prescription of all other critical drugs (Fig 2).

Conclusion

In conclusion, this audit shows that nearly one-quarter of patients in AAU have critical medication missed by doctors. There was unlikely to be obvious patient harm as a result, and there is a clear reliance on pharmacy staff for critical medication prescribing. This prompts the need to assess the reason why the pharmacy staff have dropped their performance compared with the first audit cycle. Therefore, the next audit cycle will aim to assess pharmacy staff's performance after intervention in the hospital pharmacy. We will also aim to have at least twice this sample number in order to make more critical data analysis, and will take into account reporting of patient harm (via DATIX) as a result of missed critical medication. We will continue to propose a 100% standard on critical medication prescribed by doctors within the first 24 hours of admission to AAU.

Fig 1. Proportion (%) of critical medications prescribed by doctors within 24 hours of admission to AAU.

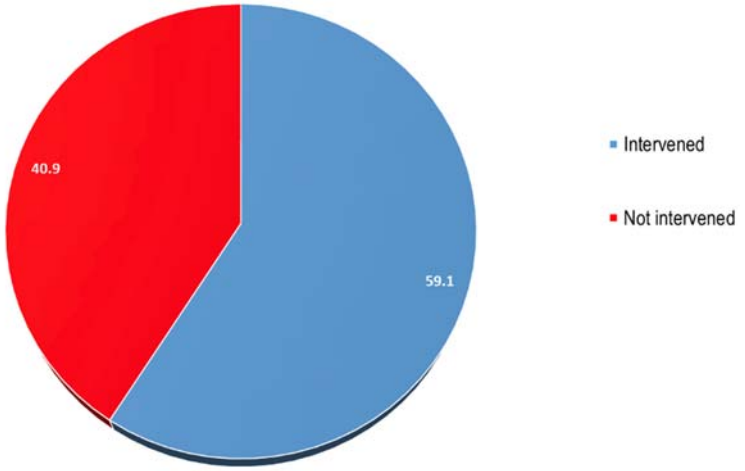
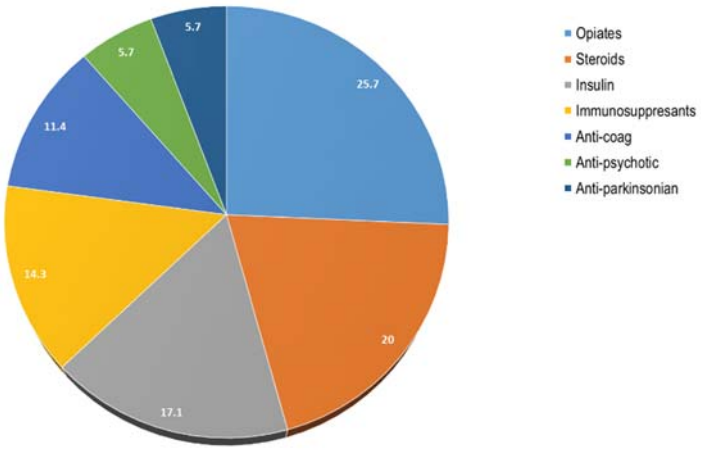


Fig 2. Distribution (%) of main critical medications not prescribed by doctors within 24 hours of admission to AAU.



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Managing chronic kidney disease – mineral bone disorder among patients on maintenance haemodialysis by achieving serum calcium and phosphate targets – a quality improvement project

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Introduction

Mineral bone disorders in chronic kidney disease increase the risk of coronary artery disease and mortality. The aim of the project is to improve the management of chronic kidney disease – mineral bone disorder (CKD-MBD) among patients on maintenance haemodialysis by achieving the target levels of serum biochemical markers (calcium and phosphate).

Materials and Methods

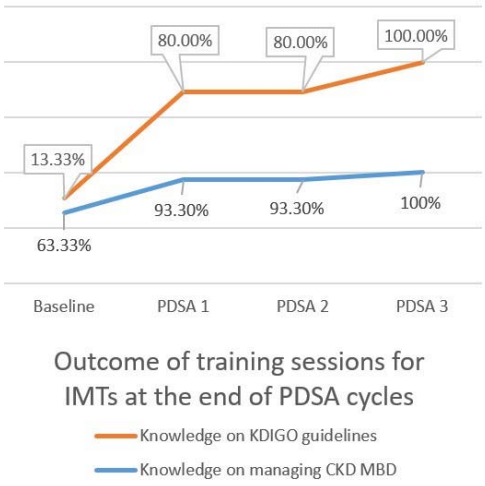
The quality improvement project (QIP) was conducted between February 2021 and February 2022 at a quaternary healthcare centre. We included outpatients undergoing maintenance haemodialysis at our centre. We investigated the reasons for not attaining the recommended target levels of serum biochemical markers. We had discussions with consultants, trainee doctors, dialysis staff and patients. We also reviewed the patient details, laboratory investigations as well as medication prescriptions from electronic medical records. It was found that some patients were not on adequate medications for achieving the targets and some patients were not aware of the importance of maintaining the specified targets.

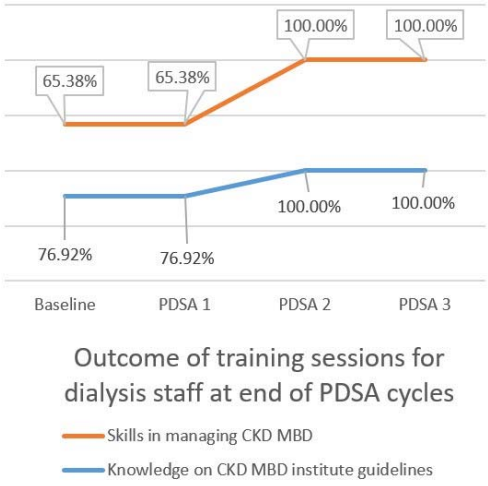
A CKD-MBD management algorithm was designed according to KDIGO (Kidney Disease Improving Global Outcomes) guidelines.[1] In plan, do, study, act (PDSA) cycle 1, we conducted training sessions in managing CKD-MBD for internal medicine trainees (IMTs). Further, the training sessions were extended to dialysis staff in PDSA cycle 2. We analysed the effectiveness of these sessions by a pre- and post-training questionnaire. In PDSA cycle 3, we continued conducting training sessions for IMTs and dialysis staff, to maintain the sustainability of the project.

Results

The outcomes of PDSA cycles are shown in Fig 1. A total of 30 IMTs and 26 dialysis staff attended the training sessions.

Fig 1. Outcome of training sessions for IMTs and dialysis staff at the end of PDSA cycles.





The primary outcome measures among the 84 patients on maintenance haemodialysis are shown in Table 1.

Table 1. Improvement in primary outcome measures – serum biochemical target levels and medication prescription

	Baseline audit – February 2021 (n=84 patients)	Final audit – February 2022 (n=84 patients)
Patients who achieved target calcium level	59 (70.24%)	64 (76.19%)
Patients who achieved target phosphate level	50 (59.52%)	61 (72.62%)
Patients who achieved both calcium and phosphate target levels	45 (53.57%)	59 (70.24%)
Patients receiving optimal calcium supplements	57 (67.86%)	79 (94.05%)
Patients receiving optimal phosphate binders	40 (47.62%)	80 (95.24%)

Conclusion

The project showed an increase of 16.67% patients achieving the recommended target levels for both serum calcium and phosphate. Other serum biochemical or radiological markers for CKD-MBD were not part of our QIP, as they required longer duration of follow-up and this is a limitation of our project. The learning points from the project were that multidisciplinary collaboration is essential in improving the quality of patient care. Improving the scientific knowledge of the patients by health education will help in motivating them to adhere to medical advice. The sustainability of the project was achieved by regular training sessions and audits.

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Clinical audit on critical time standards for hyperacute stroke management in Addenbrooke's Hospital, Cambridge, UK: measuring against national targets

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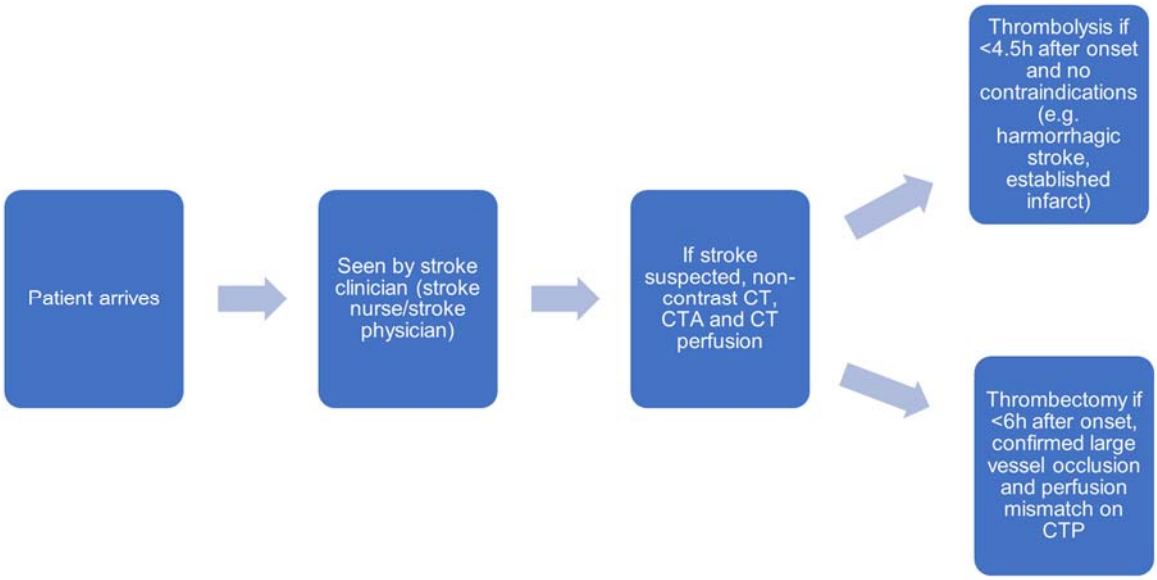
Introduction

The hyperacute treatment of ischaemic stroke is time critical – every minute counts to maximise preservation of brain tissue. Hyperacute phase treatments include thrombolysis and thrombectomy.[1] The aim of this project was to compare the performance of Addenbrooke's acute stroke team from September 2018 – September 2021 to the UK National Stroke Service Model time targets for hyperacute stroke management[2] (Fig 1). This period was chosen to cover performance before and during COVID, because the pandemic instigated radical changes in hyperacute stroke management processes and team structure in Addenbrooke's Hospital. From this audit, we hoped to determine the effects of these changes – the strengths and weaknesses of different team and process permutations to advise the development of an ideal stroke service model.

Fig 1. Schematic of the hyperacute stroke pathway at Addenbrooke's Hospital, Cambridge, UK.


Patient arrives
Seen by stroke clinician (stroke nurse/stroke physician)
If stroke suspected, non-contrast CT, CTA and CT perfusion
Thrombolysis if <4.5h after onset and no contraindications (e.g. harmorrhagic stroke, established infarct)
Thrombectomy if <6h after onset, confirmed large vessel occlusion and perfusion mismatch on CTP

Materials and methods

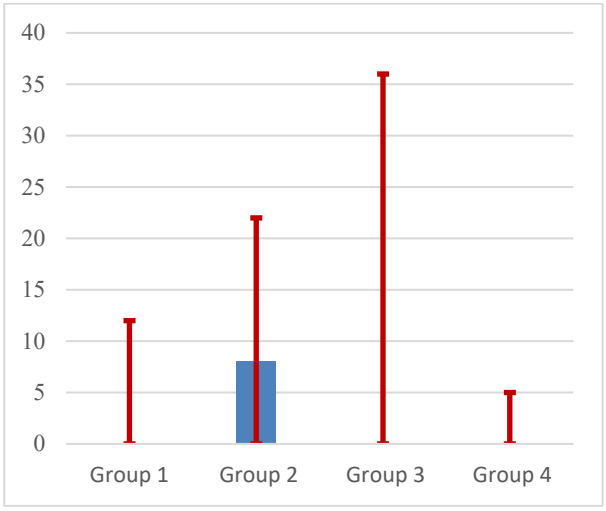
Data on door-to-first responder time, door-to-CT time, door-to-thrombolysis time, door-to-thrombectomy time and door-to-consultant time for patients presenting during working hours (Mon–Fri, 09:00–17:00) from September 2018 to September 2021 were extracted from Addenbrooke's Hospital's SSNAP (Sentinel Stroke National Audit Programme) database. Statistical analysis revealed a non-parametric distribution, thus median time and interquartile range (IQR) were calculated for comparison between different covering teams (group 1: stroke, September 2018 – February 2020; group 2: neurology consultants, March 2020 – June 2020; group 3: neurology registrars, July 2020 – September 2020; group 4: stroke, October 2020 – September 2021). Kruskal–Wallis analysis was used to compare data of different teams,[3] and subsequently, if significance was identified, pairwise Mann–Whitney U tests were conducted to determine statistically different groups.[4]

Results and discussion

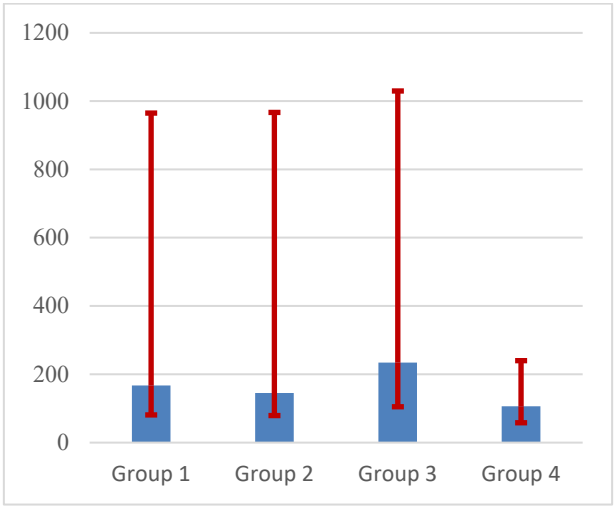
Door-to-first responder (Fig 2a), door-to-CT, door-to-thrombolysis, door-to-thrombectomy and door-to-consultant (Fig 2b) times varied over the 3 years depending on cover. The group following the pandemic, stroke registrars as first responders, was identified as having significantly lower door-to-first responder ($p<0.05$) and door-to-consultant ($p<0.01$) times.

Fig 2. Median times for door-to-first responder (a) and door-to consultant (b) in minutes for the different periods. The IQR is defined in red.

(a)



(b)



Conclusion

Better staffing and top-down prioritisation for consultant review were identified as factors supporting quicker management. Reduction of door-to-CT time, simplification of CT algorithm for rapid thrombolysis and expansion of thrombectomy services were identified as changes that could potentially improve hyperacute stroke management in Addenbrooke's Hospital.

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Bowel cancer screening programme (BCSP): designed for an asymptomatic population, but is this always the case?

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Introduction

BCSP was designed to screen an asymptomatic middle-aged population for pre-malignant colonic adenomas and early colorectal cancer (CRC). When patients are informed of a diagnosis of CRC, it is not uncommon to hear complaints of 'suggestive symptoms' for several months. We aim to evaluate the proportion of patients who have suggestive symptoms and are diagnosed with CRC in the BCSP.

Methods

Data analysed from the Exeter reporting database on symptoms recorded by the specialist screening practitioners at pre-endoscopy assessments in patient diagnosed with CRC. **Red flag** symptoms were classed as: altered bowel habits, rectal bleeding, weight loss and **other**; chronic diarrhoea, constipation, mucous discharge, abdominal pain – based on current cancer pathway referral criteria.

Results

Data analysed on pre-endoscopy symptoms from 317 patients diagnosed with CRC in the Kettering and Northamptonshire BCSP 'hub' (2015–21):

- 184 males (58.0%) / 133 female (42.0%), mean/median age 68.2 / 68 years
- 239 patients had symptoms, of which 166 were deemed **red flag**
- 78 were asymptomatic
- The most common symptom – faecal urgency (52%)

Conclusions

This analysis shows 75% of CRC patients to be symptomatic in the BCSP. Symptomatic patients, especially those with red flag symptoms, should have been referred early via the symptomatic cancer pathways. Despite the BCSP being designed for an asymptomatic cohort, it appears to have the capacity to operate as a safety net for those with suggestive symptoms. The BCSP is successful at identifying CRC, however the majority of symptomatic patients indicates the need for ongoing improvement in patient education and referral via symptomatic pathways.

Improving patient safety during pleural procedures and quality of post-procedure documentation – findings and improvements through a quality improvement project (QIP) in a district general hospital

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Introduction

Pleural procedures are commonly done in hospitals and are associated with life-threatening complications. We observed the presence of varied and unsafe approaches, sometimes leading to complications with a lack of post-procedure documentation.

Objective

We conducted a QIP to improve patient safety standards during pleural procedures, as well as standards to improve post-procedure documentation.

Methods

Audit standards were set against the British Thoracic Society Local Safety Standards for Invasive Procedures. Retrospectively, data from 44 patient clinical notes were collected and analysed to see if there was evidence of credible documentation after performing pleural procedures. As part of the intervention, a comprehensive, easy-to-use pleural procedure documentation checklist was developed and implemented. Multiple plan, do, study, act cycles were performed, and the checklist was revised as per user feedback.

Results

The baseline audit revealed that clotting profile/platelet count and anticoagulation status was not checked pre-procedure in over 70% of the patients. 16% did not have written consent obtained and thoracic ultrasound findings were not documented. 20% of patients had procedures performed without ultrasound guidance. Two patient safety incidents of iatrogenic pneumothoraces were also reported. After the intervention, a re-audit on 33 patients revealed that more than 90% of adherence improved in all areas (see table). Further cycles were carried out after revising the checklist in order to make it more user-friendly.

Conclusion

This QIP has managed to reduce the discrepancies in pleural procedure practice and has improved patient safety when undertaking such procedures. It has also improved the standards of post-procedure documentation.

Table 1. Summary of results of pleural procedure documentation in baseline audit and in subsequent post-intervention audit cycles.

	Clotting Profile	Platelet Count	Anticoagulation/ Antiplatelet Status	Written Consent	Thoracic Ultrasound	Lignocaine Concentration/ Volume	Volume Aspirated	Depth of chest drain at skin surface	Pleural fluid samples obtained	Post-Procedure Observations
Cycle 1 (Baseline)	30%	18%	18%	84%	80%	70%	68%	55%	54%	34%
Cycle 2	94%	94%	100%	100%	100%	100%	90%	100%	90%	90%
Cycle 3	98%	96%	100%	100%	100%	100%	95%	100%	95%	95%

Acute respiratory unit, RSCH Brighton: improving ward round culture and patient involvement in their care

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*lead author

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Introduction

In order to practise good ward rounds, it is recommended that teams should maintain complete records of information that has reviewed, discussed and planned. Distractions during rounds should be limited, and inter-disciplinary team peri-ward rounds coordination should be promoted.

Aims

1. Improve the ward round culture and intra-multidisciplinary team (MDT) communication peri-ward rounds over the next 12 months, and improve doctors' ward round written documentation by instituting a structured ward round proforma.

Targets:

- 100% use of the instituted structured ward round proforma
- 100% completion of the six relevant indices from RCP medical documentation guide (eg name, hospital number, date of birth)
- Minimise distractions during ward rounds
- Institute a doctor's job book, to be used by ward staff daily

2. Over the next 12 months, to improve patient experience and participation in their care on ARU:

Targets:

- To provide written information to patients in an inclusive manner, focusing on equality and diversity
- Demonstrate greater than 75% patient satisfaction with the patient information provision using surveys

Method

Multiple plan, do study, act (PDSA) cycles, NEEDS assessment (Gapanalysis), ward round self-assessment (MDT involvement), Driver diagram and Gantt chart

Results

- Structured ward round proforma created, re-audited (v6.0)
- Doctors' job book instituted
- Patient information folder (V2.0 in progress)
- New board round poster in meeting room with daily discharge checklists (v3.0)
- Improved doctors' handover list now reflects relevant information to morning board round

Limitations:

- 4-monthly doctor rotations through the department

Future plans

- Continue audit cycles across the four prongs of the project
- Developing a pictorial patient information folder that bridges language barriers.

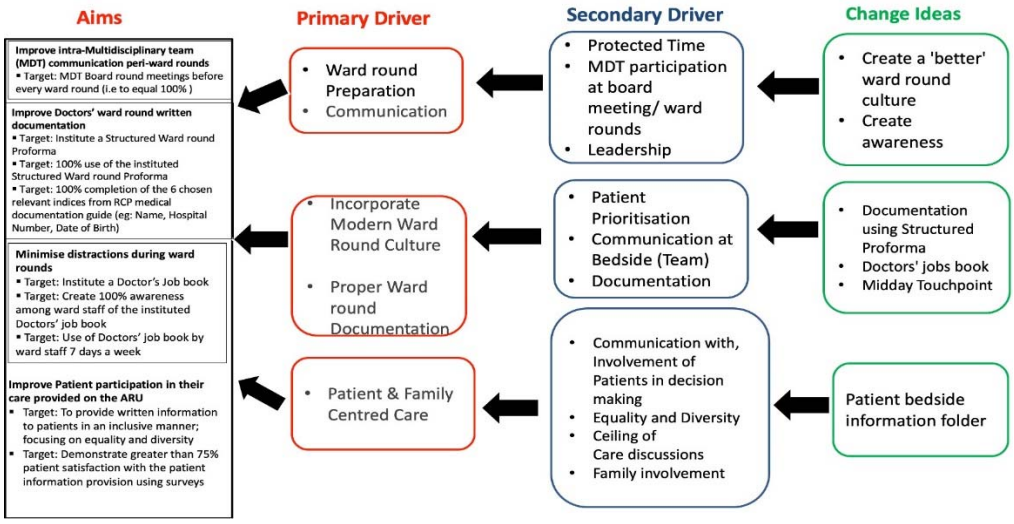
Aims
Primary Driver
Secondary Driver
Change Ideas
Improve intra-Multidisciplinary team (MDT) communication peri-ward rounds
Target: MDT Board round meetings before every ward round (i.e to equal 100%)
Improve Doctors' ward round written documentation
Target: Institute a Structured Ward round Proforma
Target: 100% use of the instituted Structured Ward round Proforma
Target: 100% completion of the 6 chosen relevant indices from RCP medical documentation guide (eg: Name, Hospital Number, Date of Birth)
Minimise distractions during ward rounds
Target: Institute a Doctor's Job book
Target: Create 100% awareness among ward staff of the instituted Doctors' job book
Target: Use of Doctors' job book by ward staff 7 days a week
Improve Patient participation in their care provided on the ARU
Target: To provide written information to patients in an inclusive manner; focusing on equality and diversity
Target: Demonstrate greater than 75% patient satisfaction with the patient information provision using surveys
Ward round Preparation
Communication
Incorporate Modern Ward Round Culture
Proper Ward round Documentation
Patient & Family Centred Care
Protected Time
MDT participation at board meeting/ ward rounds
Leadership
Patient Prioritisation
Communication at Bedside (Team)
Documentation
Communication with, Involvement of Patients in decision making
Equality and Diversity
Ceiling of Care discussions
Family involvement
Create a 'better' ward round culture
Create awareness
Documentation using Structured Proforma
Doctors' jobs book
Midday Touchpoint
Patient bedside information folder

Fig 1. Driver diagram.

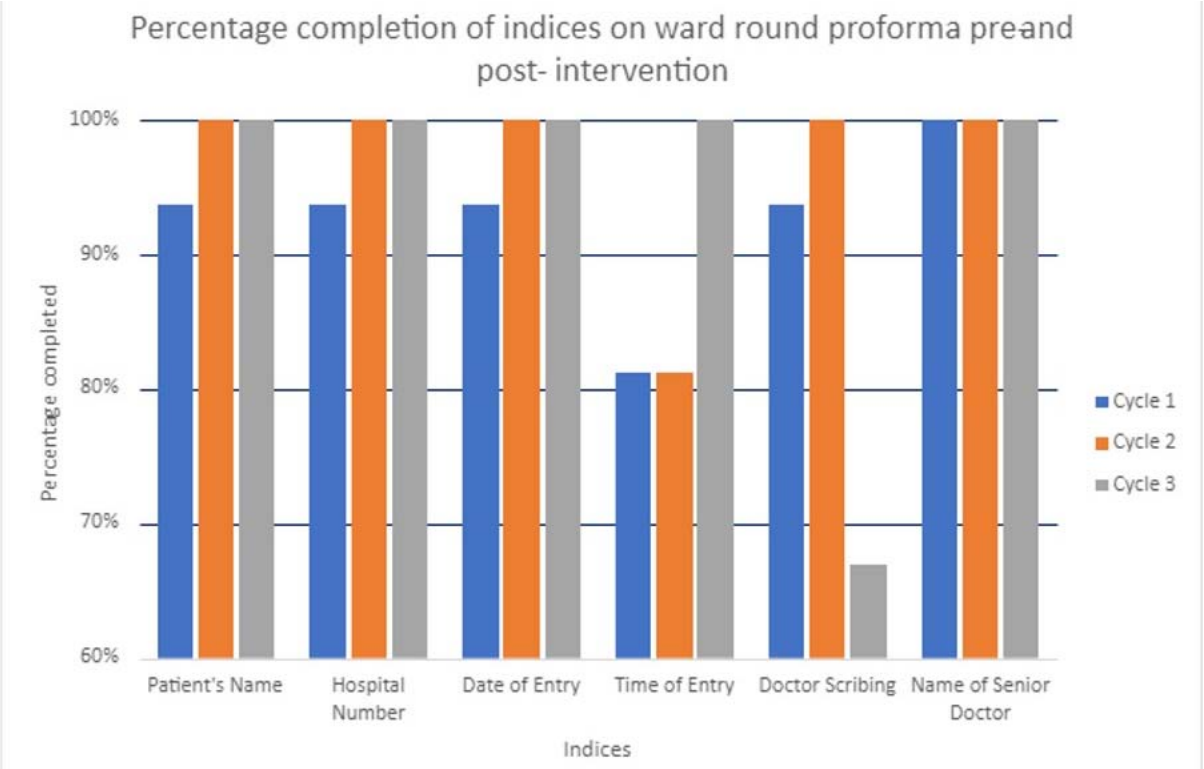

Fig 2. Chart showing percentage completion rate of Indices on the structured ward round proforma pre and post intervention across cycles 1, 2 and 3.

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Primary care audit: investigating the link between thrombocytosis and gastrointestinal cancers

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Introduction

Thrombocytosis is an adverse prognostic factor in gastrointestinal cancers.[1,2] The National Institute for Health and Care Excellence (NICE) recommends that patients with thrombocytosis undergo further investigations, including repeat blood tests or secondary referral.[3]

Objectives

The aim of the audit was to identify if patients with thrombocytosis had been screened for gastrointestinal cancer symptoms and, if not, investigate as per current NICE guidelines.

Methods

Data from a general practice in east London were analysed prospectively for a 6-month period and repeated every year from 2018 to 2022 inclusive.

Searches were run in Systemsone to filter patients above 18 years of age who presented with a platelet count above 450 X 109 L in the past 6 months. Patients were excluded if: platelet count returned to normal, they had a recognised cause of thrombocytosis, or were previously screened for gastrointestinal cancer symptoms.

Following initial data collection in 2018, a presentation was given to practice staff, educating them on recommended screening for patients with thrombocytosis (red arrow). In 2019, a pop-up message was implemented on Systemsone, which appeared for patients with thrombocytosis, reminding clinicians to screen for cancer symptoms (green arrow).

Results

Table 1. Proportion of patients screened, comparing cycles pre and post system pop-up

	Cycle 1	Cycle 2	Cycle 3	Cycle 4
	02/02- 02/07/18	26/01- 26/06/19	17/09/20- 17/02/21	14/11- 14/04/22
Total number of patients	46	30	46	45
Number of patients not screened	12	8	11	6
Percentage of patients not screened	26.1%	26.7%	23.9%	13.3%

The percentage of patients screened for gastrointestinal cancer symptoms at the practice in 2018 was 73.9%. This decreased to 73.3% in 2019, showing no beneficial effect of the staff education presentation.

Following the Systemsone pop-up implementation, the percentage of patients screened increased from 76.1% to 86.7% between 2021 and 2022 (Fig 1).

Conclusion

Implementing a system pop-up is an effective way of increasing cancer screening in general practice.

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Improving weekdays to weekends handover at base-site hospitals at Northumbria Healthcare NHS Foundation Trust: a quality improvement project

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Introduction

Northumbria Healthcare NHS Foundation Trust runs a unique model of healthcare provision in the NHS, because it includes a specialist emergency hospital (NSECH), which is England's first purpose-built specialist emergency care hospital, with emergency consultants on-site 24/7, as well as consultants in a range of specialties working 7 days a week. Patients are admitted to this hospital before being transferred to one of three base-site hospitals to continue their inpatient care.

In these base-site hospitals, a junior doctor covers an average of 2–3 wards on a weekend. We noticed there was an absence of a standardised method of weekdays to weekend hand-over at base-site hospitals.

Aim

Improve the quality of weekdays to weekends handover, leading to improved continuity of inpatient care.

Methods and results

Recurrent PDSA cycles were undertaken between November 2021 – May 2022. At baseline, only 36% of the doctors and clinical practitioners working at base-site hospitals were satisfied with the handover, with the majority suggesting the use of an electronic handover model. This model was piloted at one of the base-site hospitals. After receiving positive feedback, targeted interventions were employed, and the electronic model was implemented at all other base-site hospitals. 100% satisfaction was reported among junior doctors and clinical practitioners after completion of the interventions.

Conclusion

Implementing electronic handover model has significantly improved the quality of weekdays to weekends handover. To ensure sustained engagement, incorporation of the new electronic model of handover into the base-site induction is advised.

Anti-epileptic drug (AED) loading in status epilepticus: an audit and introduction of levetiracetam loading protocol

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Background

Status epilepticus is a medical emergency and carries a high mortality. Early seizure control is important to prevent complications of status epilepticus. In our centre, phenytoin loading is given if seizure control is not achieved after two doses of benzodiazepines. Issues arising with phenytoin loading include sodium channel interference, making it unsuitable for patients with seizures following certain drug overdoses, the need for filter during administration and problems with drug level monitoring. Levetiracetam has been shown to be as effective as phenytoin in status epilepticus.[1,2]

Objective

The aim of the audit is to review current practice of anti-epileptic drug (AED) loading in patients presenting to ICU with status epilepticus and introduce levetiracetam loading protocol to improve AED loading practice in status epilepticus.

Method

Patients were identified retrospectively through ICU database and their clinical notes were reviewed.

Results

Sixteen patients presenting to ICU with status epilepticus in the year 2021 were identified. 73% of patients received phenytoin as first AED loading, while 27% of patients were given levetiracetam. Only one patient was given the recommended phenytoin loading dose. None of the patients in the levetiracetam group received the correct loading dose. Table 1 shows the dose of phenytoin given.

Table 1. Dose of phenytoin given

Phenytoin loading dose (mg/kg)	Number of patients
10 mg/kg	1
15 mg/kg	2
20 mg/kg	1
Unknown	7

Common causes of status epilepticus in our population include known epilepsy, traumatic brain injury and subdural haematoma.

Conclusion

We found that there is lack of standardised practice of AED loading in status epilepticus and poor documentation. Therefore, we have introduced the levetiracetam loading protocol to improve current practice.

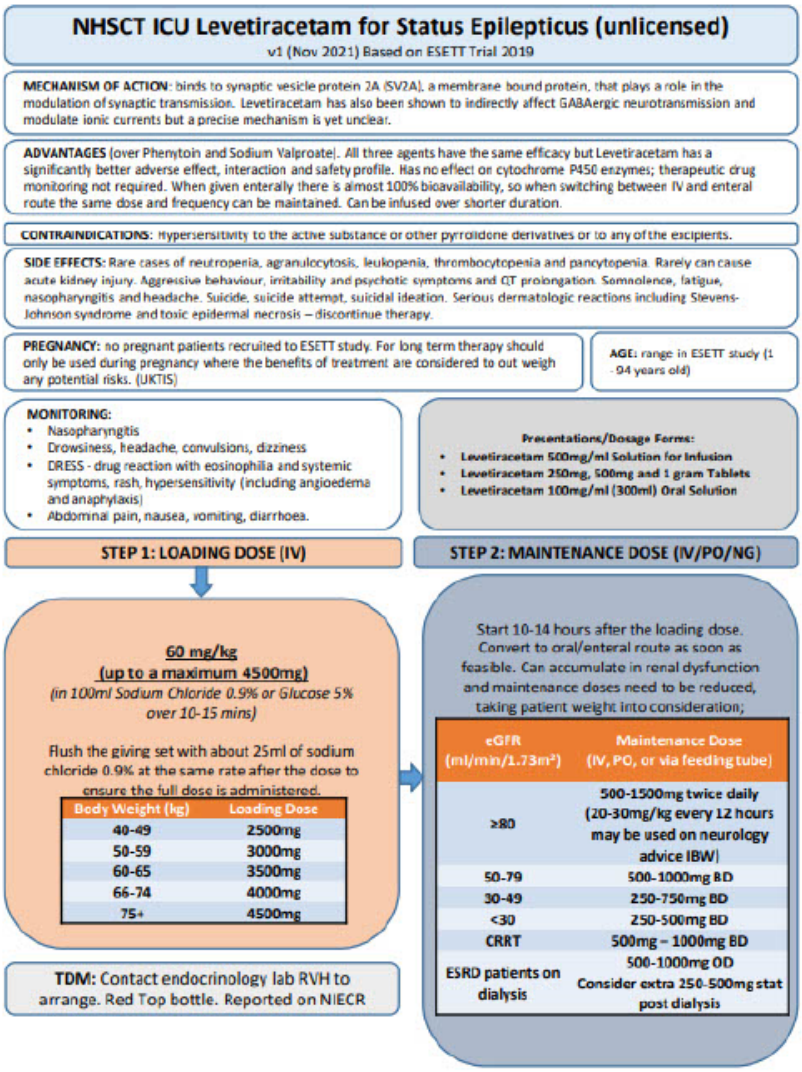
NHSCT ICU Levetiracetam for Status Epilepticus (unlicensed)
v1 (Nov 2021) Based on ESETT Trial 2019
MECHANISM OF ACTION: binds to synaptic vesicle protein 2A (SV2A), a membrane bound protein, that plays a role in the modulation of synaptic transmission. Levetiracetam has also been shown to indirectly affect GABAergic neurotransmission and modulate ionic currents but a precise mechanism is yet unclear.
ADVANTAGES (over Phenytoin and Sodium Valproate). All three agents have the same efficacy but Levetiracetam has a significantly better adverse effect, interaction and safety profile. Has no effect on cytochrome P450 enzymes; therapeutic drug monitoring not required. When given enterally there is almost 100% bioavailability, so when switching between IV and enteral route the same dose and frequency can be maintained. Can be infused over shorter duration.
CONTRAINDICATIONS: Hypersensitivity to the active substance or other pyrrolidone derivatives or to any of the excipients.
SIDE EFFECTS: Rare cases of neutropenia, agranulocytosis, leukopenia, thrombocytopenia and pancytopenia. Rarely can cause acute kidney injury. Aggressive behaviour, irritability and psychotic symptoms and QT prolongation. Somnolence, fatigue, nasopharyngitis and headache. Suicide, suicide attempt, suicidal ideation. Serious dermatologic reactions including Stevens-Johnson syndrome and toxic epidermal necrosis – discontinue therapy.
PREGNANCY: no pregnant patients recruited to ESETT study. For long term therapy should only be used during pregnancy where the benefits of treatment are considered to out weigh any potential risks. (UKTIS)
AGE: range in ESETT study (1 - 94 years old)
MONITORING:
Nasopharyngitis
Drowsiness, headache, convulsions, dizziness
DRESS - drug reaction with eosinophilia and systemic symptoms, rash, hypersensitivity (including angioedema and anaphylaxis)
Abdominal pain, nausea, vomiting, diarrhoea.
Presentations/Dosage Forms:
Levetiracetam 500mg/ml Solution for Infusion
Levetiracetam 250mg, 500mg and 1 gram Tablets
Levetiracetam 100mg/ml (300ml) Oral Solution
STEP 1: LOADING DOSE (IV)
STEP 2: MAINTENANCE DOSE (IV/PO/NG)
60 mg/kg
(up to a maximum 4500mg)
(in 100ml Sodium Chloride 0.9% or Glucose 5% over 10-15 mins)
Flush the giving set with about 25ml of sodium chloride 0.9% at the same rate after the dose to ensure the full dose is administered.
Body Weight (kg) | Loading Dose
40-49 | 2500mg
50-59 | 3000mg
60-65 | 3500mg
66-74 | 4000mg
75+ | 4500mg
TDM: Contact endocrinology lab RVH to arrange. Red Top bottle. Reported on NIECR
Start 10-14 hours after the loading dose. Convert to oral/enteral route as soon as feasible. Can accumulate in renal dysfunction and maintenance doses need to be reduced, taking patient weight into consideration;
eGFR (ml/min/1.73m²) | Maintenance Dose (IV, PO, or via feeding tube)
≥80 | 500-1500mg twice daily (20-30mg/kg every 12 hours may be used on neurology advice IBW)
50-79 | 500-1000mg BD
30-49 | 250-750mg BD
<30 | 250-500mg BD
CRRT | 500mg – 1000mg BD
ESRD patients on dialysis | 500-1000mg OD Consider extra 250-500mg stat post dialysis

Fig 1. ICU Levetiracetam loading protocol.

References

1 Kapur J, Elm J, Chamberlain JM *et al*. Randomised trial of three anticonvulsant medications for status epilepticus. *N Engl J Med* 2019;381:2103–13.

2 Cock HR, Coles LD, Elm J *et al*. Lessons from the Established Status Epilepticus Treatment Trial. *Epilepsy B*ICU Levetiracetam loading protocol*ehav* 2019;101(Pt B):106296.

Implementing the 2-minute board round check list; a safety initiative

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Introduction

All staff in clinical areas should be aware of the resuscitation trolley (RT) location, in order to deliver prompt lifesaving care in an emergency. Nevertheless, our recent audit showed that approximately half of healthcare workers were unaware of its location. Therefore, a 2-minute board-round checklist was introduced to ensure up-to-date knowledge of safety issues such as RT location, fire exits and infection control issues (Fig 1).

NHS
Milton Keynes
University Hospital
NHS Foundation Trust

Board Round safety checklist

2-minute safety briefing

To be carried out by Nurse in charge

Topics

Location of crash trolley

Location of fire exit

Update resuscitation status of patients

Any infection control issues

Other issues for escalation

Date	Completed by	Sign

Fig 1. Board round safety checklist.

Method

The checklist was trialled in two wards over 4 weeks. The nurse in charge completed the checklist during morning board rounds with the multidisciplinary team, including healthcare assistants, physiotherapists, nurses (including agency nurses) and doctors (including locum doctors). Knowledge about the RT was evaluated using a snapshot questionnaire before and after the intervention.

Results

Pre-intervention results showed that 48.5% of staff were unaware of the RT location. The staff reported that this was due to the high frequency of ward rotation and inadequate ward induction. Only 31.8% of staff received ward induction. The confidence rating of staff in accessing the trolley during an emergency was below 60%.

After the 4-week trial using the checklist, 95.5% of staff were able to correctly identify the location of the RT and 60% of staff reported receiving ward induction. Confidence rating also increased to over 90%.

Conclusion

The 2-minute board round checklist made a significant improvement in staff's ability to locate the RT. It successfully targeted the high turnover of staff, including locum and agency staff. Overall, knowledge of RT location should be prioritised, which can be supported by the 2-minute board round checklist.

Improving the documentation of FIO_2 for arterial blood gases

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Background

Arterial blood gas (ABG) analysis is indicated in all critically unwell patients, and for patients with unexpected deterioration in peripheral oxygen saturation (SpO_2).[1] It is imperative to contextualise the PaO_2 with the current fraction of inspired oxygen (FiO_2), but only 25/95 (26%) ABGs had FiO_2 electronically inputted in our trust over 2 weeks.

Objective

This quality improvement project aimed to improve the frequency of ABGs with FiO_2 electronically documented.

Method

A total of 935 ABGs were studied for FiO_2 attribute across two PDSA cycles from May 2021 to January 2022. Interventions included ward-based education, information posters and making FiO_2 a mandatory attribute.

Results

Improved electronic FiO_2 documentation (92%) was demonstrated after FiO_2 became mandatory for ABG analysis. The second cycle demonstrated special variation on control chart immediately after this intervention (Fig 1). Balancing measure was number of ABGs analysed on the machine following the attribute becoming mandatory, with no special variation demonstrated. Posters and ward education in isolation did not implement change.

Conclusion

It is unlikely that poor documentation of FiO_2 was solely due to lack of knowledge as informal ward education and the provision of information posters providing estimated FiO_2 for oxygen devices did not implement change in either PDSA cycle. By changing the process map of ABG analysis, change was rapidly implemented and sustained, highlighting the importance of consideration of process in quality improvement.

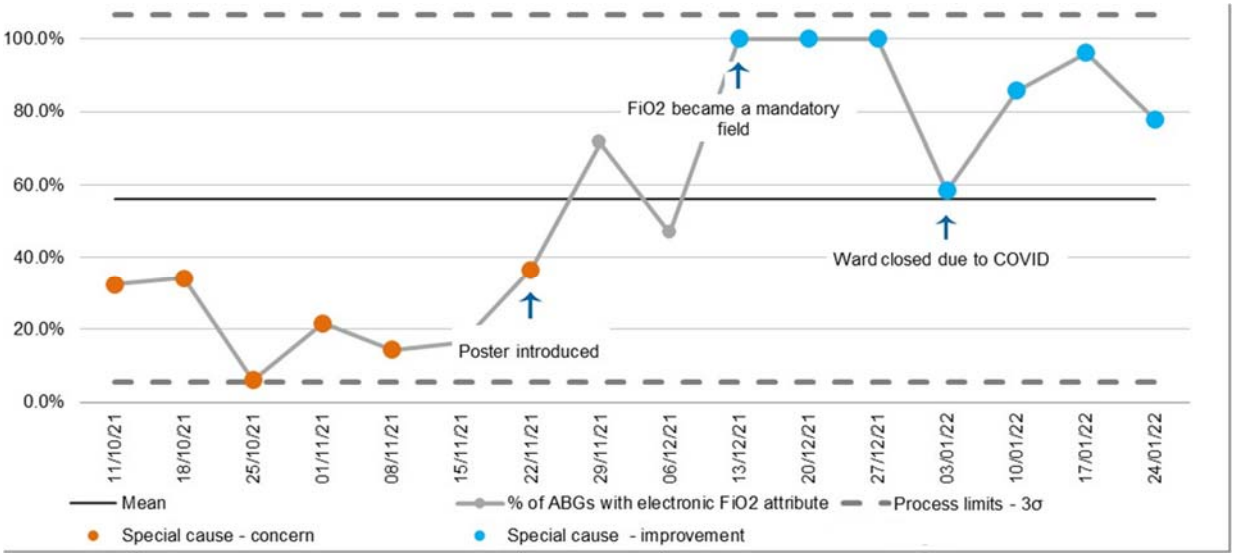

Fig 1. Control chart (XmR) of FiO_2 attributes on ABGs during PDSA cycle 2.

Reference

1 O'Driscoll B, Howard L, Earis J *et al*. BTS guideline for oxygen use in adults in healthcare and emergency settings. *Thorax* 2017;72(Suppl 1):ii1-ii90.

A multi-cycle quality improvement project to improve the proportion of DNAR forms discussed with the patients' next of kin

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Introduction

The Welsh DNACPR policy[1] states 'the clinical basis should be discussed with the patient as well as their nominated individual … and a DNACPR decision … clearly documented'.

Objective

To improve the proportion of DNAR forms being discussed with the next of kin (NOK), with the patients' consent, on our ward.

Methods

The QIP was completed on a respiratory ward in a DGH. For baseline and each cycle all ward notes were examined four times over 2 weeks. We recorded if DNAR forms had been discussed with the patient and NOK.

Three plan, do, study, act (PDSA) cycles:

1. Ward team educational sessions highlighting importance.
2. Using the daily MDT board rounds to identify forms needing discussion.
3. Adapting the ward handover to highlight resus status and whether forms had been discussed.

Results

- Percentage of forms discussed with either patient or NOK at baseline was 91%. After cycle 1 it was 94%, cycle 2 94%, cycle 3 98%.
- Percentage of forms discussed with NOK at baseline was 56.2%. After cycle 1 it was 69%, cycle 2 79% and cycle 3 87%.
- Barriers to the project included:
  - high patient turnover on the ward
  - transfers between sites
  - on-call rotas of the QIP team.

Conclusions

- Overall, we improved the rate of discussion of DNAR forms with patient and NOK.
- For sustainability of the interventions, we need to include other MDT members who do not rotate.
- In future we need to work with other hospitals to improve discussion of forms prior to transfers within ABUHB.

Reference

1 All Wales Advance and Future Care Planning Strategy Group. *Sharing and involving – a clinical policy for Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) for adults in Wales*. 4th Edition. 2022.

Has the COVID-19 pandemic had an effect on the incidence and severity of anorexia nervosa referrals in young people?

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Introduction

It is estimated that 1.25 million people have an eating disorder in the UK[1] with 95% of these patients being between the ages of 12 and 25. Eating disorders have a detrimental effect on both a patient's physical and mental health and have the highest mortality rate of any psychiatric illness.[2] The COVID-19 pandemic has seen the rise of home workouts, fitness challenges and online physical education lessons. Alongside the social isolation and the difficulties for the NHS to provide face-to-face services, the effects of the pandemic have unintentionally promoted a wide number of risk factors for eating disorders.[3] With health boards in England reporting that their eating disorder referrals have almost doubled since the pandemic,[4] have Wales' young people also been affected?

Objective

To investigate the effect of the COVID-19 pandemic on the incidence and severity of anorexia nervosa.

Method

Retrospective information on people under the age of 18 with new anorexia nervosa referrals across a 2-year period using the hospital's databases for patient information and letters.

Results

Nine patients presented between 1 June 2019 and 31 May 2020 with an average BMI of 17.98 and 47 patients presented between 1 June 2020 and 31 May 2021 with an average BMI of 17.90. This is a 411% increase in new anorexia nervosa presentations.

Conclusions

There has been a 411% increase in the number of new anorexia nervosa presentations and an increase in the severity of presentations between 01/06/2020 and 05/31/2021 compared to between 01/06/2019 and 31/05/2020 in Cwm Taf Morgannwg (CTM).

References

1 Beat. *Statistics for Journalists*. 2021. [Accessed 8 Jul 2021] www.beateatingdisorders.org.uk/media-centre/eating-disorder-statistics

2 Johns Hopkins All Children's Hospital. *Eating Disorder Facts*. 2021. [Accessed 8 Jul 2021] www.hopkinsallchildrens.org/Services/Pediatric-and-Adolescent-Medicine/Adolescent-and-Young-Adult-Specialty-Clinic/Eating-Disorders/Eating-Disorder-Facts

3 Solmi F, Downs J, Nicholls D. COVID-19 and eating disorders in young people. *Lancet Child Adolesc Health* 2021;5:316–18. doi: 10.1016/s2352-4642(21)00094-8

4 Newlove-Delgado T, McManus S, Sadler K *et al*. Child mental health in England before and during the COVID-19 lockdown. *Lancet Psychiat* 2021;8:353-354. doi: 10.1016/s2215-0366(20)30570-8

Sick day rules for patients on potential nephrotoxic drugs to prevent acute kidney injury or individual drug related adverse effects

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Introduction

Patients being initiated on potential nephrotoxic drugs need to be educated/counselled on sick day guidance. This is particularly important in diabetic, heart failure and chronic kidney disease patients who are usually on a combination of drugs and more prone to acute kidney injury (AKI) leading to hospital admissions.

Objective

To establish if the suggested National Institute for Health and Care Excellence (NICE) guidance of sick day rules has been conveyed to the patients to prevent AKI and adverse effects of potential nephrotoxic drugs ACEi, ARBs, diuretics, metformin, SGLT2i.

Method

Prospective study of 87 patients admitted to the hospital who have been taking one or more of the above-mentioned drugs were asked to complete a questionnaire after consent. This was followed by educating the patient regarding sick day rules-guidance according to NICE guidelines. Patient notes / summary care records were used. Renal function before and after admission was used to grade the AKI according to KDIGO classification.

Results

- Only 16 (18%) patients were given guidance; 13 knew to stop all the potential nephrotoxic drugs.
- 11 were given verbal advice, four were given leaflets and one self-educated using Google.
- Incidence of AKI in patients who had received advice and who had not was 25% and 24% respectively.
- 30% of patients using diabetes related drugs who didn't receive sick rules had AKI compared with none.
- Incidence of AKI in renal-related drugs in patients who had received advice and who had not was 18.75% vs 41.2%

Conclusion

Sick day guidance card can be an essential tool in preventing AKI.

References

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Enhancing safe prescribing practices using thematic teaching: a quality improvement project

Authors: Zehra Irshad,[A*] Sana Zafar,[A] Qutaiba Shudayfat[A] and Muhammad Khan[A]

*lead author

[A]University Hospitals Coventry and Warwickshire, UK

Introduction

Safe prescribing is crucial, as it directly affects patient safety. Prescribing errors account for one-in-five medication errors in England, leading to 1,081 deaths.[1] The majority of these errors occur at time of admission[2] and therefore establishment of safe prescribing practices in the acute medicine unit (AMU) is fundamental to maintaining patient safety.

Objective

The aim of this project was to evaluate the prescribing practices in AMU against standards using recurrent plan, do, study, act (PDSA) cycles.

Methods and results

Drug kardex (n=50) of patients admitted to AMU were evaluated, which showed non-compliance to standards in documenting allergy status, regular medications and cancelled medications. Staff survey (n=50) showed low awareness of required standards with only 30% correctly answering the prescribing questionnaire. Therefore, an intervention consisting of a short video based on prescribing standards was designed and circulated. A prescribing checklist was also displayed in clinical areas for guidance. Moreover, we liaised with pharmacy to highlight common errors within the department and conducted thematic teachings to encourage safe prescribing practices. Post surveys (n=50) showed significant improvement in staff knowledge with 70% scoring more than 50% on the questionnaire. Re-audit results (n=75) showed significant improvements – 30% in documenting allergy status, 60% in documenting cancelled medication and 35% in prescribing regular medications.

Conclusions

Excellence in prescribing is challenging and is dependent on communicative and collaborative work within the team.[2] Working together with pharmacists can promote a safe culture by reporting adverse events alongside thematic teaching on reported errors to promote good patient care and safety.

References

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